Who wants to be an entrepreneur? One week left to take your shot at winning $30,000 in cash and services. Contest details on **PAGE 10.**

IP call centers VoIP lets companies bring the contact center to home workers. **PAGE 69.**

NetworkWorld

The leader in network knowledge ■ www.nwfusion.com

May 10, 2004 ■ Volume 21, Number 19

Cisco's WLAN plan has landed

■ BY JOHN COX

Cisco's idea seems simple enough: Save time and money on building an enterprise wireless LAN by plugging new modules into Catalyst 6500 switches that exploit the wireline infrastructure.

However, rivals and some Cisco switch users say the new WLAN blade and other wireless products announced last week are too late. They also chide Cisco for lagging on radio frequency management, failing to simplify access point management and charging too much.

Cisco's latest announcement fleshes out the company's Structured Wireless Aware Network (SWAN) strategy, announced nearly a year ago. The basic idea, which Extreme Networks and Foundry Networks also are pursuing, is to add a range of mobility and WLAN features to existing wireline switches, instead of adding dedicated WLAN switches to the network.

■ **Wireless network advances aplenty at Interop. Pages 13 and 24.**

Sales of WLAN switches, though barely $13 million in the fourth quarter, are on the rise, according to Infonetics Research. Fourth-quarter sales topped the previous quarter's numbers by 51%, the research firm says.

Cisco announced its WLAN Services Module that fits into the Catalyst 6500, a new version

See Cisco, page 14

N+I spotlights security and apps management

■ BY DENISE DUBIE

A mix of new and established companies this week will use NetWorld+Interop Las Vegas 2004 to launch a slew of management products, many aimed at helping businesses safeguard networks and applications against worms or other attacks.

Fresh off a week in which the

See Management, page 106

More Interop news

■ **Start-up targets denial-of-service attacks. Page 12.**

■ **MCI rolling out VoIP over DSL. Page 12.**

■ **Vanguard tackles VoIP, apps performance management. Page 40.**

■ **For online coverage go to www.nwfusion.com, DocFinder: 1969**

A Wider Net

Inside MIT's new geek lair

Robots roam and nostalgia subsides; building design attracts 'collisions of people by accident.'

■ BY ANN BEDNARZ

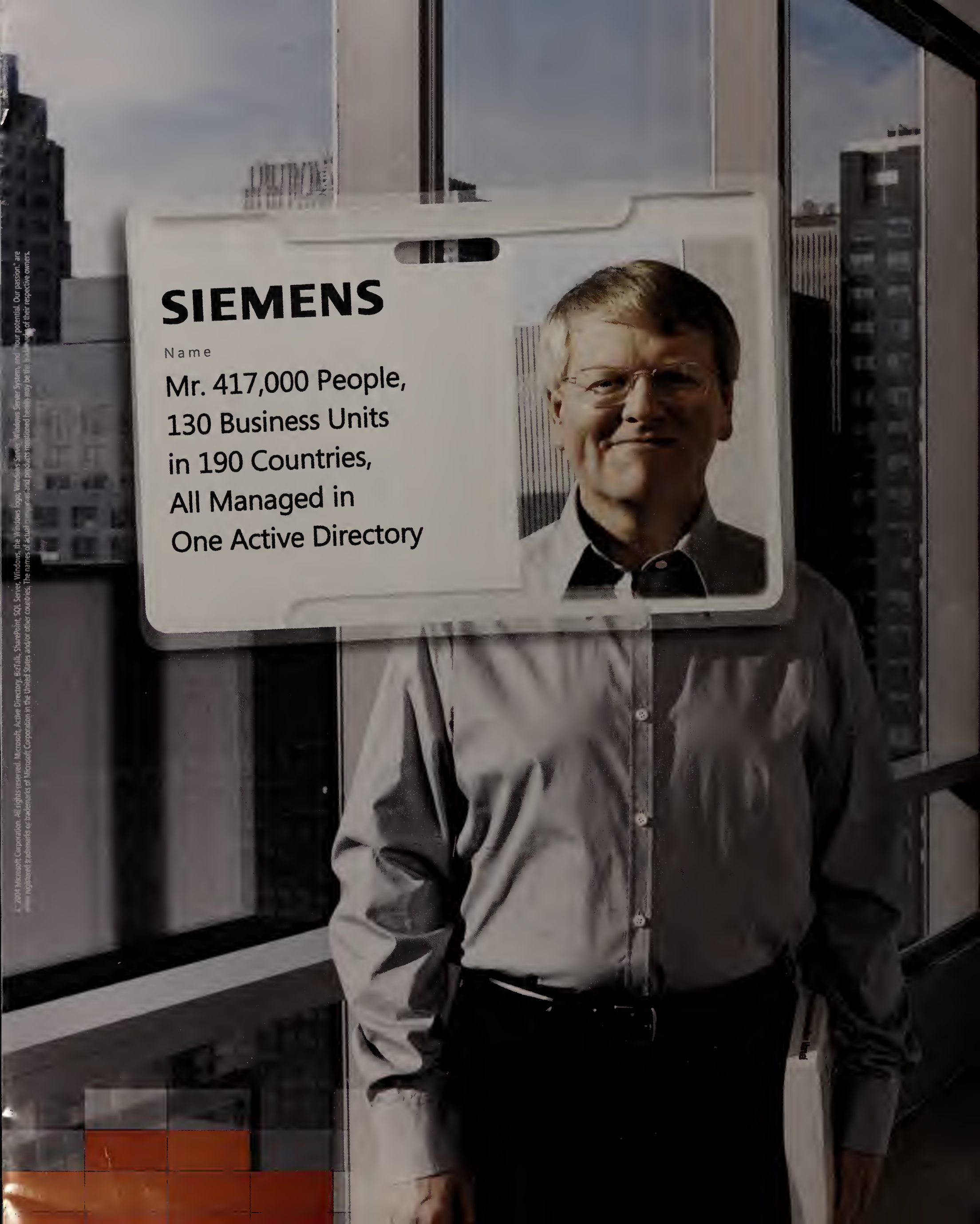
CAMBRIDGE, MASS. — According to legend, when researchers working out of Building 20 at the Massachusetts Institute of Technology needed to run wires between laboratories, they'd grab a broom and drive the handle through the building's interior walls to make the necessary connections.

That's the kind of place Building 20 was. A beater. An unpretentious container for unbridled scientific experimentation. MIT constructed Building 20 in 1943 in the northeast corner of its

See MIT, page 104

ANDY RYAN

Computer scientists, linguists and philosophers occupy MIT's bold new research home.



Microsoft

Your potential. Our passion.™

"With 130 different business units, we're like the ultimate manageability case study."

John Minnick
Manager, Technology Development, Siemens

Microsoft Windows Server System makes Siemens' infrastructure easier to manage. Here's how: using Windows Server 2003 with Active Directory and Exchange Server 2003, Siemens built a single directory with over 400,000 identities worldwide across 130 business units. This allows them to manage identities at both a global and local level. It's software that helps you do more with less. Get the full Siemens story and a hands-on management tool at **microsoft.com/wssystem**

Windows Server System™ includes these products:

Server OS	Windows Server™
Operations Infrastructure	Systems Management Server
	Application Center
	Operations Manager
	Internet Security & Acceleration Server
	Windows® Storage Server
Application Infrastructure	SQL Server™
	BizTalk® Server
	Commerce Server
	Content Management Server
	Host Integration Server
Information Work Infrastructure	Exchange Server
	Office SharePoint™ Portal Server
	Office Live Communications Server


Make a name for yourself
with Windows Server System.
Microsoft
Windows
Server System

Peer-to-peer is clearly a problem.

Take a close look at the serious security, infrastructure and legal liability threats P2P file sharing poses to your organization. Reduce your risk with Websense Enterprise®. Block access to P2P protocols, sites and applications with the only software that offers end-to-end policy control to effectively eliminate P2P security breaches and other dangers. Stay focused on the P2P solution with a **free white paper** and assess your risks at **www.websense.com/p2p.**

WEBSENSE.

FILTER | PROTECT | OPTIMIZE

NetworkWorld

News

Infrastructure

Enterprise Applications

Service Providers

Net.Worker

Technology Update

Opinions

PalmOne's Zire includes a digital camera. Page 48.

Features

Testers drill down into SIP, 802.1X security and MPLS

Exclusive package previews the cutting-edge interoperability testing to be showcased this week as part of the InteropNet Labs at NetWorld+Interop in Las Vegas. **Package begins on page 58.**

InteropNet Labs Las Vegas 2004

VoIP breaks down the walls of the call center

Companies are using IP-based systems to route calls to home workers and satellite offices. **Page 69.**

CLEAR CHOICE TEST

Cisco's MDS 9509: Cisco's MDS 9509 director-class SAN switch does it all and wins our Clear Choice designation. **Page 75.**

Network Physics NP-2000 appliance: Network Physics has an appliance that can gather reams of statistics on your network's performance, but the user interface is a bit sluggish. **Page 79.**

NetworkWorldFusion

www.nwfusion.com

Exclusive

Network World Radio

Network World Lab Alliance partner Rodney Thayer discusses the state of 802.1X, an authentication standard that's gaining traction in wireless networks. **DocFinder: 1962**

NetWorld+Interop 2004 Show Planner

Heading to Vegas? Get the heads-up on the best keynote addresses, sessions and events so you can make the most of your time at this week's show. **DocFinder: 1963**

Face-Off: Is a unified WLAN approach better than an overlay?

Two industry insiders debate whether Wi-Fi should be deployed as an extension of the wired LAN. Read their views, then jump in with your opinion in our forum. **DocFinder: 1821**

NW200 Compare-o-matic

If you can't get enough of the facts and figures of the Network World 200 companies, head online where you can compare companies head to head in 20 categories. **DocFinder: 1738**

Seminars and Events

Are you totally secure in your enterprise security management?

Are you managing your network as a security intelligence asset? Find out how and get the answers you need at Enterprise Security: Fail-Safe Architecture, a new Network World Technology Tour Event. Click, qualify and attend free.
DocFinder: 1856

■ **CONTACT US** Network World, 118 Turnpike Road, Southborough, MA 01772; **Phone:** (508) 460-3333; **Fax:** (508) 490-6438; **E-mail:** nwnews@nww.com; **STAFF:** See the masthead on page 16 for more contact information. **REPRINTS:** (717) 399-1900

SUBSCRIPTIONS/CHANGE OF ADDRESS: Phone: (508) 490-6444; Fax: (508) 490-6400; E-mail: nwcirc@nww.com; URL: www.subscribenw.com

Columnists

Small Business Tech

Growing like a weed
Columnist James Gaskin explains how a lawn maintenance company uses iPaqs to expand without increasing staff.
DocFinder: 1966

HomeLAN Adventures

Charter's PVR service disappoints
Senior Editor of Product Testing Keith Shaw on how the unimpressive PVR affected his wireless router plans.
DocFinder: 1967

Weblogs

Security Notes

Senior Editor Ellen Messmer looks at the Department of Defense's long-awaited policy on wireless and what that means for the industry. **DocFinder: 1964**

Layer 8: IT nightmares contest

Sure, you've brought work home, but has it ever crept into your bedroom and invaded your subconscious in the middle of the night? Send us your best IT-related nightmare by Friday, May 14, and you could win. **DocFinder: 1965**

Breaking News

Go online for breaking news every day. **DocFinder: 6342**

Free e-mail newsletters

Sign up for any of more than 40 newsletters on key network topics.
DocFinder: 6343

What is DocFinder?

We've made it easy to access articles and resources online. Simply enter the four-digit DocFinder number in the search box on the home page, and you'll jump directly to the requested information.

News Bits

The Wi-Fi security standards shuffle

Two key improvements for the security and performance quality of Wi-Fi devices are scheduled to reach wireless network users this year. The Wi-Fi Alliance says it will certify products for the new 802.11i and 802.11e standards by September. The 802.11i standard is the complete version of the preliminary security standard Wi-Fi Protected Access introduced last year, while 802.11e is a new standard designed to improve the quality of wireless networks that transmit voice and video. Security has been one of the biggest obstacles to the growth of wireless networking. Last year, WPA replaced the flawed Wired Equivalent Privacy protocol to shore up wireless security before the full 802.11i standard could be ratified. WPA uses a dynamic encryption key as opposed to the static key WEP used, and it improves the user authentication process. The 802.11i standard adds Advanced Encryption Standard technology, a stronger level of security than used in WPA. Corporations and governments, which need the highest level of security available, might have to replace some of their network equipment to support AES.

AT&T in local hot water

Qwest last week filed suit against AT&T, claiming its rival carried some part of phone calls over the Internet in an effort to avoid paying tens of millions of dollars in access fees. Last month, SBC filed a similar suit against the carrier, saying it's owed $141 million in access fees. Instead of using local carriers to complete long-distance calls, AT&T put these calls over the Internet at some point to avoid paying tariffed access fees to them, the local exchange carriers say. The suit is based on the fact that the FCC rejected a bid from AT&T suggesting it pay lower access fees for calls that travel over the Internet. But the FCC did not say that AT&T is required to pay LECs retroactively for past traffic handled in this manner. Instead the government agency said the courts would look at each case individually.

ASP consolidation continues

Enterprise application hosting company Surebridge last week said it will sell itself to fellow application service provider NaviSite for about $54 million. The acquisition continues a consolidation trend in the managed applications and infrastructure market: Both NaviSite and Surebridge bulked up by buying smaller rivals. NaviSite is a survivor of the dot-com meltdown. Started by incubator CMGI in 1997, Surebridge came close to running out of money before being saved by loans and restructuring. However, combined with Surebridge, NaviSite will have more than $30 million in revenue each quarter, the company said.

COMPENDIUM

Neighborly Wi-Fi

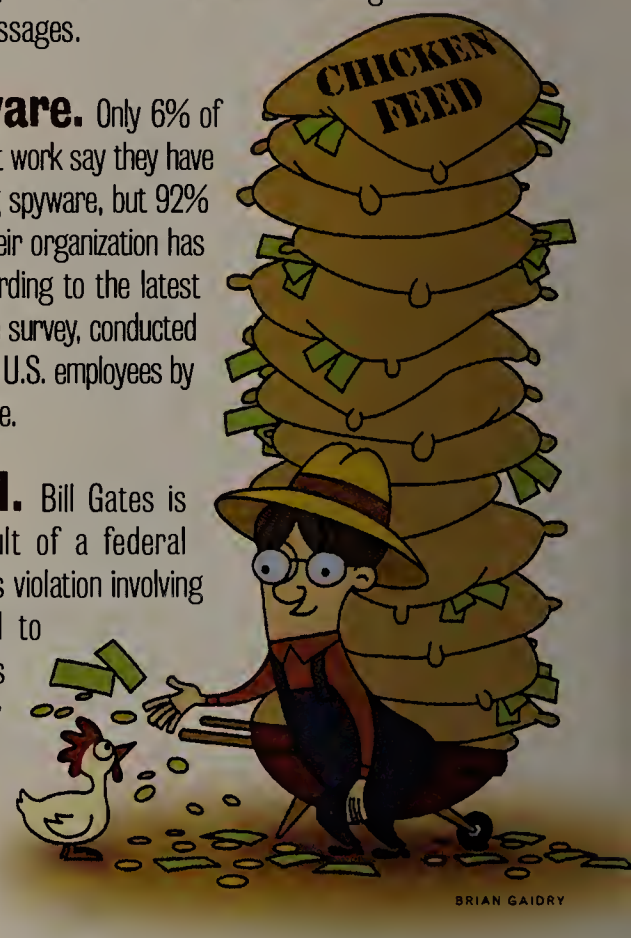
Paul Callahan reports how an acquaintance deals with Wi-Fi interference from the neighbors: "He logs in to his neighbor's Linksys access point, enters the default password and changes the [access point's] channel. That solves the problem, and his neighbor doesn't even know it!" ***Read more at www.nwfusion.com, DocFinder: 1956.***

The Good The Bad The Ugly

Spam plan. Microsoft last week said it is using a system that identifies legitimate e-mail senders by requiring them to pass rigid qualifications and plunk down a bond that can be debited if they misbehave. The goal of using the system, developed by IronPort Systems, is to enable desirable e-mail to get around filters designed to block unwanted messages.

Spyware vs. spyware. Only 6% of employees who access the 'Net at work say they have ever visited a Web site containing spyware, but 92% of IT managers estimate that their organization has been infected by spyware, according to the latest Websense Web@Work study. The survey, conducted by Harris Interactive, tapped 500 U.S. employees by phone and 350 IT managers online.

Bill gets slapped. Bill Gates is $800,000 poorer as a result of a federal government fine for a securities violation involving anti-trust matters unrelated to Microsoft. Of course, that's chicken feed for the man *Forbes* lists as the richest person on the planet, with a net worth of $46.6 billion. ➤



Siebel CEO makes room for Big Blue exec

Siebel Systems founder Tom Siebel stepped down as CEO last week to make room for 25-year IBM veteran Mike Lawrie, who most recently headed Big Blue's sales and distribution operations. Siebel remains the company's chairman. Industry watchers called the executive change a shock, but a welcome one. The CRM software maker still holds the lead in market share, but the vendor's growth slowed in recent years as it confronted a downturn in software buying and increased competition from SAP, PeopleSoft and Oracle. Someone new with a fresh approach to sales is a good thing for Siebel, analysts say.

Phishing getting foul

A new Gartner study found that the number of online scams known as "phishing attacks" have spiked in the last year and that online users are frequently tricked into divulging sensitive information to criminals. The study, which ended in April, surveyed 5,000 adult Internet users and found that about 3% reported giving up financial or personal information after being drawn into a phishing scam, which uses e-mail messages and Web pages designed to look like correspondence from legitimate online businesses. The results suggest that as many as 30 million adults have experienced a phishing attack and that 1.78 million could have fallen victim to the scams, Gartner said. ISPs need to address the phishing problem to prevent the Internet and e-mail from being discredited as media for customer transactions, Gartner said.

Outsourcing the business process

Spending on business-process outsourcing services will continue to increase in coming years, but so will clients' expectations for the quality and breadth of vendors' offerings, according to an IDC study released last week. Worldwide spending on BPO services reached $405 billion in 2003, an increase of about 8% from 2002. Revenues are expected to grow at a compound annual rate of 11% through 2008, when they will total $682.5 billion, according to IDC. In a BPO engagement, a company hands over an entire business process or function to an external services provider. This contrasts with traditional IT outsourcing engagements, which involve the transfer of an IT task or process. Fueling the demand for BPO services are companies' desire to reduce costs, focus on their core business, obtain new expertise, and increase efficiency and productivity, IDC said.

Get your groove on

Move to the IP beat with converged voice equipment from Sprint

The new portfolio of Sprint business communications systems can help put your business in the IP groove. Fabulously future-ready and totally customer-centric, this equipment can give you, your management and even your finance team reason to dance. Contact us today to learn more and to locate a Sprint Authorized Dealer near you.

sprint.com/equipment

Sprint® One Sprint. Many Solutions.™

Microsoft, partners tune Web services

■ BY JOHN FONTANA

SEATTLE — Microsoft and its partners are using groups of Web services protocols to develop specifications that support remote management of servers and a plug-and-play method for connecting devices to a network.

The specifications are designed to make it easier for IT to upgrade and manage networks. For example, a printer could be added to a network and made available to desktops without having to install client software.

Last week at its 13th annual Windows Hardware Engineering Conference (WinHEC), Microsoft introduced Web services for Management Extension for Windows Server and Devices Profile for Web services.

The specifications provide a glimpse of how Microsoft plans to make it easier for IT to support connectivity and services across the Windows platform of clients, devices and servers in its future operating systems starting with Longhorn. Longhorn is slated for release in 2006.

"Web services are the next IP, the next layer of functionality in the network stack that you do not want to reinvent," says Jeff Schlimmer, program manager for advanced Web services at Microsoft.

Both specifications are unique undertakings for Microsoft in that the protocols can be used with non-Windows platforms.

"Web services will have a key role [in the future]," said Bill Gates, chief software architect for Microsoft. "It will be the primary device connectivity in Longhorn."

Microsoft highlighted that fact by introducing the Devices Profile specification it co-authored with Intel, Lexmark and Ricoh. The specification details how devices such as printers, imaging hardware and eventually mobile phones and other handhelds could use Web services to signal they are connected to the network, as well as to advertise their services and use other services. Clients could attach to the devices over a network without having to install drivers or other software.

"The big story with laptops that are occasionally connected to the enterprise is that users have problems accessing printers, and knowledge management and other software," says Jason Bloomberg, an analyst with ZapThink. "Often those users are limited to getting on the intranet."

Microsoft and its partners plan to submit Device Profile this fall to the Universal Plug and Play Forum for consideration as the foundation for the UPnP 2.0 Device Architecture.

Microsoft also introduced the Network Connected Device Driver Development Kit, for customers who want to implement Devices Profile and hook it to the current Windows Plug and Play subsystem.

Conspicuously absent from the effort is HP, the world's largest printer manufacturer.

"We see a role for all devices to be on the network, and Web services will provide that capability," says Joe Keller, product manager for HP. "But we want to see the Devices Profile specification in a standards body so everyone has equal say in the way it is developed."

Devices Profile relies on a collection of existing Web services protocols Microsoft is developing with its partners, including WS-Discovery, WS-Addressing, WS-Eventing and WS-Policy.

"We are bringing Web services to the devices side so [those devices] can communicate with the Web services infrastructure," said Peter McKiernan, lead product manager in the Developer and Platform Evangelism group at Microsoft. "This is a way to reduce some of the headaches IT faces when they work with devices."

Devices Profile will be supported in Indigo, the services bus technology under development for Longhorn. And Longhorn's user interface will have a hardware and devices folder that will include devices found on the network through Device Profile.

Device Profile is not the first specification of its kind. Java has Jini for connecting devices, but it requires that every device have a Java Virtual Machine. ■

Picture this

Microsoft and its partners have proposed a specification to make it easier to add, find and use devices on a network. The first version of the Devices Profile focuses on printing and imaging devices, which are expected to be purchased by the millions each year.

Products	2004	2005	Compounded annual growth rate (2004-2008)
Inkjet printers	62.5	63.3	1.2%
Laser printers	11.7	12.3	4.8%
Scanners	43.1	46.9	9%

SOURCE: IN-STAT/MDR

Microsoft slates Windows Server update for 2005

■ BY JOHN FONTANA

SEATTLE — Microsoft next year will plug the gap between versions of its server software with the release of an update for Windows Server 2003 — a move that might offer some measure of relief for corporations with annuity licensing contracts.

The update will come between the release last year of Win 2003 and the expected arrival of its successor, Longhorn Server, potentially in 2007.

The Win 2003 Update might help spark renewals and new sign-ups for Microsoft's Software Assurance software maintenance program. Key to the two- and three-year Software Assurance contracts is access rights to the latest software upgrades.

Next year, Win 2003 will be 2 years old, and Longhorn Server won't be available potentially for another two years or more.

"A lot of customers are saying 'Wait, I spent a lot of money on Software Assurance, and what did I get for my money?'" says Laura DiDio, an analyst with The Yankee Group.

The server update also will align security features between the client and server operating systems and include a handful of upgrades and tool enhancements for Active Directory.

At its 13th annual Windows Hardware Engineering Conference, Jim Allchin, Microsoft's group vice president in the platforms group, said Win 2003 Update, known internally as R2, will align the server with security enhancements that are part of the forthcoming Windows XP Service Pack 2, specifically its personal firewall.

Allchin said the server upgrade highlight is the concept of "isolation." He compared the technology to the personal firewall, saying that before a laptop could connect to a network, it would be put in isolation and run through a series of IT-configurable tests. The tests would check for things such as missing system updates or antivirus signatures.

Microsoft would not provide any other details on the server update but said that it would clarify its server road map in the coming weeks. In addition to the Win 2003 update, Microsoft also plans to release in 2005 a version of Windows Storage Server, codenamed Storm. ■

■ Read about Microsoft's problems with its channel partners. PAGE 33.

Sasser worm exposes patching failures

■ BY ELLEN MESSMER

Organizations that evaded last week's Sasser worm infestation credited vigilant patching processes and preventative measures such as installing server-based behavior-blocking software and worm filtering gateways.

Anti-virus software, on the other hand, was of limited use in stopping the four known variants of Sasser because the worm could re-infect machines even with the most up-to-date virus signatures, says Vincent Gullotto, vice president at Network Associates' Avert Labs. "If you don't have the [Windows] patch in place, this can happen," he says.

According to Mikko Hypponen, head of anti-virus research at F-Secure in Helsinki, Finland, the Sasser worm variants don't delete files or leave Trojans. This makes it a fairly benign worm and a lot like the Blaster worm of last August. Like Blaster, damage stems from Sasser's intense network scanning, which can paralyze networks (see graphic).

Among those experiencing Sasser's sting last week were American Express, Goldman Sachs, Air Canada, British Airways, Germany's Deutsche Post, the European Commission and several schools, including the University of California, Irvine and University of Massachusetts at Amherst.

"It affected some of our support systems and caused a degree of disruption internally," says Lucas Banpraag, a Goldman Sachs spokesman. "It delayed processing of some orders."

The Sasser worm infested the financial firm's network a week after hitting its offices in Asia. Goldman Sachs is reviewing how it prioritizes patch management and wants better guidance from Microsoft, the spokesman says.

Microsoft had made the patch available more than two weeks ago for the so-called Local Security Authority Subsystem Service (LSASS) vulnerability that Sasser exploits, giving it a critical rating.

But the sheer size of some organizations makes it hard for them to patch all systems, says Alfred Huger, senior director of engineering for security response at Symantec.

Wolters Kluwer, an 18,500-employee firm in Amsterdam that provides legal information services, got hit with Sasser.

"It was only half a dozen PCs out of hundreds," says Mike Antico, CTO for the firm's North American divisions. "How did these people escape being patched? We think it's because they bring in portable computers."

Many corporations test patches before applying them to machines, particularly critical servers, so the larger the organization, the harder it is to go through this process before a worm appears to take advantage of a newly identified hole.

Companies say they are turning to other defensive measures above and beyond simply patching. One of these is behavior-based software that blocks worms and other types of attacks by recognizing suspicious activity.

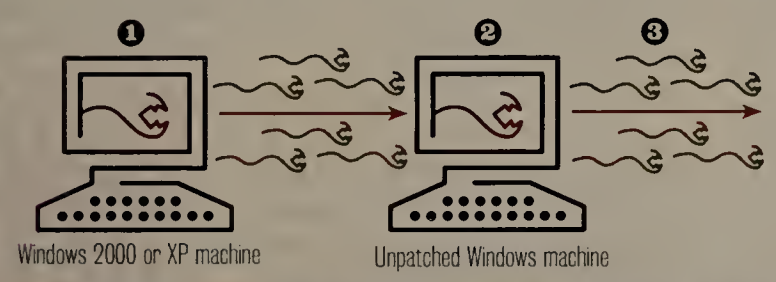
"Our Windows environment was patched within three days of the released [LSASS] patch, except for one server where a critical system needed to be regression-tested longer," says Eben Barry, manager of IT operations at Network Health, a Medicaid insurance provider in Cambridge, Mass. Luckily, this time the delay did not result in an infection.

See Sasser, page 15

Sasser strikes

■ **HOW IT WORKS**

Sasser is similiar to an earlier worm, Blaster, because users do not need to receive e-mail or open a file to be infected. Instead, just having a vulnerable Windows machine connected to the Internet is enough to get stung. Here's how it works:



1. An infected Windows XP or 2000 machine spawns 128 threads that scan random IP addresses for exploitable systems. Specifically, it's looking for a vulnerable component of Windows called the LSASS. Microsoft released a patch, MS04-11, on April 12.
2. Once a vulnerable system is found, the worm creates a script and executes it. This script instructs the system to download and execute the worm from the infected host. The newly infected system accepts this FTP traffic on TCP Port 5554.
3. The newly infected machine then fires off its own set of scanning threads. The traffic generated by all these threads can slow and disrupt network performance.

MCI rolls out VoIP over DSL

Offering targeted at small offices.

■ BY DENISE PAPPALARDO

MCI is set to launch a VoIP-over-DSL service it says could save small offices money.

Slated to be announced this week at NetWorld+Interop, MCI Advantage over DSL is designed to let businesses with up to 60 users at one location consolidate their voice traffic onto a one symmetric DSL connection to reduce costs vs. traditional telephone services.

The offering works by moving analog or native IP voice traffic through an integrated access device, over an MCI DSL connection to the Internet, where it's passed to the public switched telephone network. The service includes unlimited local and long-distance voice service.

Local exchange carriers have pioneered VoIP-over-DSL services, but MCI is out in front of interexchange carriers such as AT&T and Sprint. Sprint says it is trialing such a service in Las Vegas.

MCI's offering supports up to 15 simultaneous calls, though offices of 40 to 60 people can sign up for it on an oversubscribed basis, figuring not everyone is on the phone at once. On a monthly basis, MCI charges a flat fee based on line speed, plus $40 per simultaneous call (see graphic).

The service could cost up to $850 per month for a 768K bit/sec DSL. Using MCI Advantage over a dedicated T-1 for the same office would cost about $1,500 per month.

Some users might be willing to pay extra for a T-1 because meantime-to-repair guarantees from carriers are typically stronger with T-1s than with DSL, says Brian Washburn, an analyst at Current Analysis. Users can expect a T-1 to be repaired within four hours of an outage, with DSL meantime-to-repair usually within 24 hours. "Users need to be aware that they may be sacrificing cost for a slower meantime-to-repair guarantee," he says.

The service is available in the 31 metropolitan markets where MCI offers its own DSL service. The carrier says it will expand VoIP over DSL with Covad Communications in the third quarter. Covad's DSL network reaches 235 metropolitan markets across the U.S.

(For an update on MCI's financial status, see page 37.) ■

MCI Advantage over DSL

MCI is making its VoIP-over-DSL service available in 31 markets. Here are some service details:

Speed choices	384K bit/sec, 768K bit/sec
Monthly price	$200 or $250 flat fee, plus $40 per simultaneous user
Capacity	Up to 15 simultaneous users
Gear included	Siemens SpeedStream Business Class DSL Router

Start-up aims to shut down denial-of-service hits

■ BY TIM GREENE

Start-up IntruGuard Devices will use the NetWorld+Interop show this week to launch rate-based equipment designed to protect servers from denial-of-service attacks.

The company's first two appliances, the IG200 and IG2000, sit between servers and the Internet, cutting off server-bound traffic that exceeds customer-set thresholds. These spikes are an early warning that a DoS attack is underway that could overwhelm the servers.

What could set IntruGuard apart from other vendors selling this type of equipment is that it has developed chips to handle traffic sorting and it has the benefit of seeing what other vendors have tried, says Rodney Thayer, a network security consultant with Canola-Jones and a member of Network World's Lab Alliance test program. Competitors include Captus Networks, DeepNines Technologies, Top Layer Networks and Vsecure Technologies.

Products from these companies use policies to limit traffic that can reach servers, and each has its own set of tools for defining traffic to be controlled and what to do when limits are exceeded. The products also differ in whether they include other security such as firewalls.

Thayer, who tested these other systems for Network World (see www.nwfusion.com, DocFinder: 1955), says his subsequent test of the IntruGuard gear showed it should deliver the best performance for server farms with eight to 20 servers.

Beta tester Fiber Internet Center, a hosting provider in Palo Alto, says the appliance can cut off DoS attacks nearly 30 seconds faster than an Extreme Networks Black Diamond switch that the company has configured to limit traffic rates to stop DoS attacks. According to the center's founder, Bob Evans, the appliance protects a server for a site that sells conservative political books that gets attacked six to eight times per day. While it doesn't sound like much, enough session requests can come in 30 seconds to slow down the server or even crash it, he says.

The IG200 and 2000 can set up to eight different rate policies based on Layer 2, 3 and 4 parameters for different sets of servers that a single box could protect.

Scheduled to be available in July, the Fast Ethernet IG200 will cost $12,000, and the Gigabit Ethernet IG2000 will cost $25,000. ■

Fast times for servers and apps

■ BY PHIL HOCHMUTH

Sluggish application servers and bottlenecked data center links are the targets of several new products scheduled to be announced this week at NetWorld+Interop.

On tap are data center switches that could help corporate users make their applications run faster by offloading application and network processes from servers to appliances, vendors say. Also being announced is server adapter hardware aimed at putting fatter network pipes into servers.

Vendors scheduled to launch gear at the show include:

• **NetScaler**, which is introducing Version 2.0 of its 9300-series application acceleration appliance. The NetScaler box, based on Intel Xeon processors and a Gigabit Ethernet backplane, is used in corporate and service provider networks as a server load balancer and Layer 7 application switch, and for HTTP Web traffic compression. The box also can act as a Secure Sockets Layer (SSL) VPN termination device.

The new software compresses TCP-based application data, letting client-server-based programs, such as ERP or database applications, run faster by taking up less WAN or LAN bandwidth. Another new feature lets the NetScaler box cache static and dynamic application and database data from servers, and deliver the data to client machines. The vendor says this feature will help free server processing power and make enterprise applications run faster.

Another feature on the NetScaler box is upgraded support for SSL VPN traffic. The new software lets a NetScaler 9300 support up to 5,000 SSL VPN connections simultaneously (twice as many as were supported on the previous 9300 version).

• **Coyote Point Systems**, which also will have a new application acceleration device at the show. Like NetScaler, Coyote Point's Equalizer Extreme is based on an Intel server architecture. The company is teaming with Dell to offer its load-balancing, SSL acceleration device on a PowerEdge 1750 server.

Coyote Point's product would sit at the edge of a data center and balance traffic among Web and application servers. The device can offload SSL encryption from servers. This could let Web servers that process sensitive data — such as credit card purchases — run faster and handle more connections. The Coyote Point/Dell product costs $10,000.

Gear from NetScaler and Coyote Point competes with products from Cisco, Crescendo, F5 Networks, Foundry Networks, Nortel, Radware, Redline Networks and Top Layer Networks.

• **Intel**, which will show a new server multi-mode fiber network interface card. It is the second 10G Ethernet adapter from the vendor, following the introduction of its single-mode fiber 10G NIC last year. The new device is based on the same PCI-X interconnect standard as Intel's previous 10G NIC, but is smaller. The NIC supports the 10GBase-SX standard for 10G over multi-mode fiber, with a range of up to 1,000 feet. The NIC is available for about $5,000.

• Also on the NIC front, **Broadcom** will introduce chips for server adapters that will let NIC vendors combine server and storage networking functions. The NIC silicon combines Gigabit Ethernet with ISCSI storage protocol support, as well as TCP offloading and remote direct memory access (RDMA) technology.

The RDMA and TCP offload features in the silicon are aimed at making servers run applications faster. TCP offload lets a server devote more CPU power to application processing, with network processing offloaded to NIC hardware. RDMA lets the server inject network traffic data into server memory, bypassing the CPU and I/O channels, which can cause latency in high-end applications. Broadcom says the NICs will be available from vendors later this year for about $200. ■

Wireless security, voice wares to rollout at N+I

■ BY JOHN COX

Vendors this week will showcase a battery of products designed to advance wireless networks.

The offerings, being shown at NetWorld+Interop in Las Vegas, address such areas as Bluetooth security and voice traffic quality.

AirDefense will unveil BlueWatch, software that works with a Bluetooth radio adapter card in a laptop to scan for Bluetooth signals. It's one of the few on the market; Red-M also offers a scanning product.

Bluetooth is a generally short-range radio, typically 30 to 100 feet — although Class 1 devices can reach about 350 feet. Bluetooth is being embedded or plugged into handhelds, laptops, cell phones and headsets, but also is bringing new risks.

"Our chief security officer has done demonstrations of how to use your Bluetooth cell phone to connect to another Bluetooth cell phone, and use that other phone to make a call," says Jay Chaudhry, executive chairman of AirDefense.

BlueWatch runs on any Windows XP or 2000 laptop. It scans for Bluetooth signals via a Bluetooth USB adapter. Currently, you have to carry the laptop around to scan. Later this year, as with its 802.11 wireless LAN (WLAN) scanning products, AirDefense will add code so that its compact radio sensors, distributed through a building, will be able to pick up Bluetooth signals and pass information back to a server. A tabbed graphical displays lays out information about the devices, signals and other features.

Joseph Dell, CTO for Vigilar, an Atlanta information security firm, uses BlueWatch to monitor cellular phones, some printers and sometimes ad hoc Bluetooth networks in the company's offices and elsewhere in the building. "People try, often by accident, to connect to our Bluetooth network," he says. "We keep an eye on it [with BlueWatch] and can mitigate the risks."

BlueWatch will be released this month and will retail for $295.

Also at the show, Airespace will introduce three products, including the first access point to use multiple input multiple output (MIMO) smart antenna technology.

MIMO uses two or more antennas and clever algorithms to, in effect, send data over multiple signal paths at the same time. The result is in increased capacity and range compared to conventional WLAN antennas.

The Airespace Intelligent RF Access Point is intended for sites that have lots of radio frequency interference or where high performance or long range is critical, says Jeff Aaron, senior manager of marketing.

He says MIMO antennas create a more symmetrical radio environment, providing a more consistent and reliable signal than conventional access points.

Users should see two to three times the throughput (up to the maximum 54M bit/sec) and range of Airespace's existing 1200 access point, according to Aaron.

The MIMO device is scheduled to ship in the third quarter. Price has not been set.

Also new from Airespace is Airespace Wireless Location Services (AWLS), which features the company's existing RF Fingerprinting software on a dedicated PC server. The software can calculate a user's location to within about 15 feet, in 90% of the cases, Aaron says.

New APIs let outside applications, such as ERP, scheduling or emergency 911 applications, access AWLS data. The appliance will be available in the third quarter, and pricing has not been finalized.

AWLS also will be able to track a new 802.11 active radio frequency identification tag, based on Bluesoft's AeroScout tag. About the size of a small matchbox, the tag can be attached to portable radiology equipment, airport luggage containers or mobile manufacturing gear. Unlike typical passive tags, the AeroScout technology sends out a continuous 802.11b/g signal, which AWLS can pick up and process. Tags will cost $95.

Another vendor, Colubris Networks, says it is upgrading its CN1250 access points to better support voice.

Colubris will become the latest vendor to include the Spectralink Voice Priority protocol in its WLAN gear. The protocol is a widely used quality-of-service (QoS) technology for VoIP calls.

Each Colubris access point can run up to 16 separate media access control addresses, known as Basic Service Set Identifiers. With Spectralink Voice Priority,

See Wireless, page 14

NETWORLD + INTEROP

www.nwfusion.com

More online!

In this Webcast, Craig Mathias, principal at Farpoint Group, leads you through the pros and cons of wireless networking. Mathias keynoted Network World's Wireless LANs Technology Tour and shares highlights from his presentation.

DocFinder: 1950

Cisco

continued from page 1

of its Wireless LAN Solution Engine (WLSE), plus a new indoor-outdoor Aironet access point/bridge. To complete the package, users also need the Supervisor Engine 720.

Assuming an existing 6500, the total price for the package, with additional software licensing, would be about $62,500.

Individual prices are $18,000 for the new Catalyst blade, licensed for up to 150 Aironet access points (users can expand that to 300 access points with the Advanced Feature Set for Cisco's IOS for $8,000 if they don't already have AFS); $8,495 for the WLSE server Version 2.7; and $28,000 for the Supervisor Engine 720.

> **"[Cisco has] this 'white elephant' in the back of the network, and they give you GRE services at the core. That's not a WLAN switching architecture."**
>
> **Gary Singh**
> Senior director of marketing, Symbol Technologies

Relative simplicity

For existing Cisco customers, the relative simplicity of deploying large-scale WLANs might be a key attraction. The new blade can be slotted into the 6500, with the Supervisor Engine 720. Users then can and download a software update to the Cisco Aironet access points, enabling them to support the Multipoint General Routing Encapsulated (GRE) protocol. The access points use GRE to tunnel back across the IP network to the 6500.

The switch takes care of processing all the data traffic generated by the WLAN. The new blade takes care of the unique features of wirelessly connected clients: tracking users, Layer 3 fast roaming over subnets and maintaining IP addresses.

One Cisco WLAN user eager to pilot the new product is John Halamka, CIO of CareGroup Health System, a Boston healthcare consortium. "Layer 3 roaming is desirable, as we do not want to extend Layer 2 broadcast domains beyond our distribution layer [in the network]," he says. Layer 2 wireless bridging caused a network outage in 2002. "We are very enthusiastic about Cisco's new product," he says.

"As long as the functions and services they introduce to the switch do not add undesirable workload to the switch's CPU and backplane, or require us to introduce a Catalyst operating system version that is not mature, we should be OK," Halamka says.

"You enable [the WLAN] using a large number of services already available on the Catalyst 6500," says Abner Germanow, program manager for enterprise networks at IDC. "For the unique WLAN services, you have the improved WLSE, where they now have enough in there to address the security concerns around access points and do more radio frequency management. Combine this with the roaming and other functions in the new 6500 module and it's a pretty strong solution."

Rivals disagree, arguing that Cisco's package is a pricey kludge.

"They've got this 'white elephant' in the back of the network, and they give you GRE services at the core. That's not a WLAN switching architecture," says Gary Singh, senior director of marketing at Symbol Technologies, which previously offered traditional WLAN access points, but now is betting the farm on its WS 5000 wireless switch. (Read more on this topic with our Face-off, page 55.)

Singh says that Cisco's WLAN scheme is simply a very expensive way to manage the Aironet access points, which run a special version of Cisco's IOS software. "They've picked an architecture that's very heavy, and expensive, for most deployments," he says.

A "heavyweight" solution doesn't bother some users. "I do agree that having IOS on the [Aironet] access points is like adding hundreds of routers to our network," says Todd Diersheide, a senior network engineer at Sovereign Bank in Wyomissing, Pa. "We already manage hundreds of routers on our network, and I consider that something we do very well."

As for Symbol's contention that Cisco's offering is expensive, Cisco officials disagree.

"If you look at any medium-size business or a 10-story building, and all of a sudden, they'll easily have 150 to 200 access points," counters Douglas Gouray, product line manager for Cisco's Internet systems business unit. "If you take an [entirely new] deployment, with the Supervisor Engine and the new 6500 module, and divide that by the [maxim] number of access points supported [300], it's a very cost-effective number," he says.

Feel the power

Throughput, or how much wireless traffic each switch can handle is another consideration, and Cisco touts the power of the 6500's hardware.

"Look at our throughput numbers, compared to a single Gigabit Ethernet port [on some rival WLAN switches]. If you do the math, some of these switches can only support about 13 access points. You'd need 16 different switches to support 300," Gouray says. By contrast, he says, the 6500 with just one forwarding engine, terminating the WLAN's fast secure roaming tunnels in hardware, can handle 10 million packets per second for WLAN users. Cisco says one of the new blades can support 6,000 users on 300 access points.

Those are important numbers for big customers, for whom last week's news is a "superb announcement," says Gary Berzack, CEO for Tribeca Express, a Manhattan network integrator that has worked with Aironet WLANs for nearly 10 years. "We have existing [network] infrastructures where we can just throw this in. [Through Cisco] we can have a national procurement capability. I can get round-the-clock support and decent support [response] times. It's a known, well-designed enterprise-class product."

But there are weak points, he acknowledges. "Companies like AirMagnet have thoroughbred [WLAN scanning] sensors designed for the enterprise space," he says. "Don't rely on [the 6500 blade and the new version of WLSE] for all your intrusion-detection system and radio-frequency monitoring. There are other things out there that are far more mature."

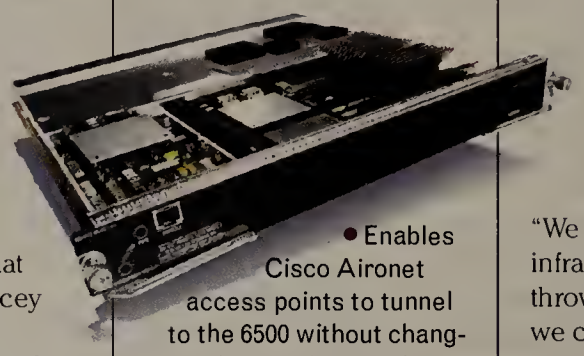
Berzack acknowledges that the prices are hefty. "It's not for the faint of heart," he says. "It's aimed at quite large deployments."

But some in the hungry pack of vastly smaller rivals, all of whom offer dedicated WLAN switches and simplified access points, might be repositioning themselves, ceding the biggest corporations to Cisco and intensifying their battle for the small to midrange market.

"You may see competitors start to focus on the smaller enterprises, where the Cisco solution is too complex and expensive," IDC's Germanow says. ■

All together now

Cisco's Wireless LAN Services Module is designed to help companies marry wireless and wireline networks by bringing WLAN features to the Catalyst 6500 switch.



- Enables Cisco Aironet access points to tunnel to the 6500 without changing the wired network.
- Layer 3 roaming between subnet.
- Segmenting of end users into groups without using virtual LANs.
- Extension of Catalyst 6500-based services, such as access control lists and quality of service, to WLAN users.

Wireless

continued from page 13

each access point can have one traffic queue for data and one for voice, with one or more addresses set aside for prioritized voice traffic.

The access points also will include code for the Wireless Multimedia Extensions, a subset of the QoS features that are nearing final approval as the 802.11e standard.

These upgrades to the Colubris gear are scheduled for availability in July.

WLAN mesh vendor Firetide will use N+I to unveil its HotPoint 1000R, a ruggedized version of its wireless access point for outdoor use. The company's existing 1000S is an indoor access point. Both use a 802.11b/g radio and a set of algorithms to create a mesh network topology, similar to that of the Internet. Traffic is routed over this wireless mesh instead of cables.

The product, which has a range of about 2 miles and includes two Ethernet ports, will be generally available in June for about $2,000.

Also at the show, Senforce Technologies will release Enterprise Mobility Security Manager 2.5, client/server software for administering network access on mobile devices.

The new version includes code that lets administrators control whether and how data can be stored on a mobile laptop or PDA, or on any attached peripheral device. Policies can be set that only let an end user store data on the built-in hard drive, not a USB-attached mini-drive or CD.

Senforce's client runs as a Network Driver Interface Specification driver at Layer 2, where it can do fast, stateful inspection of packets. Policies set on a server, such as shutting off a WLAN card if security trouble is detected, are enforced on the client.

Version 2.5 costs $89 per user, with a yearly maintenance charge that is 20% of the total per-seat fee. ■

■ **Read about more wireless products that are expected to be on tap at NetWorld+ Interop. PAGE 24.**

AT&T launches network-based IP VPN over MPLS

■ BY DENISE PAPPALARDO

AT&T is offering users another flavor of VPN that the carrier says is more economical than traditional frame relay networks and typically more economical than customer premises equipment-based IP VPNs.

AT&T's Network Based IP VPN service runs over the Multi-protocol Label Switching (MPLS) public IP network, which lets users set up a fully meshed IP VPN. This is in addition to AT&T's current network-based VPN service, IP Enabled Frame Relay.

AT&T is not the first carrier to offer a network-based IP VPN service, but it says most competitors, such as Sprint and MCI, are doing so over private IP networks. AT&T is using MPLS to keep its customers' VPN traffic separate and secure as it runs over the carrier's Internet backbone.

"Native IP provides cost advantages to customers because they can opt for usage-based billing ... and multiple management options," says Rose Klimovich, vice president and general manager of global VPN services at AT&T. Also, because the service is supported on the carrier's "native IP infrastructure," IP VPN customers are using the same access routers as dedicated Internet access customers. This presents a cost advantage to AT&T, which doesn't need to manage multiple edge devices to support multiple services.

In contrast, AT&T's IP Enabled Frame Relay service uses different edge gear to connect users coming into the Internet network via dedicated frame relay circuits.

One customer is seeing the cost benefits. CS Group, which provides building products for architects, moved from a national frame relay network to the AT&T Network Based IP VPN service about six months ago and expects to save $100,000 over the next two years, says Michael Dyson, director of IT at the Lebanon, N.J., company.

"The main reason we went with an MPLS network is because we have a fully meshed network for less per month," Dyson says. "Every site has a dedicated T-1. Before we had all of these [permanent virtual circuits] with bandwidth restraints and single points of failure."

CS Group also moved away from frame relay because it wanted to deploy advanced applications such as VoIP and unified messaging. Dyson says his group is in the midst of deploying both.

Currently AT&T is only offering its Network Based IP VPN service domestically. The carrier says it will roll out the service internationally in the future, but would not provide a time frame.

AT&T's offering includes a standard service-level agreement. The carrier guarantees 99.99% service availability, that latency will not exceed 60 millisec and that packet loss will not exceed 0.7%.

The service starts at about $700 per month per dedicated T-1 site, depending on number of sites. Users can have AT&T fully manage their network or choose the unmanaged version of the service. AT&T also offers burstable T-1 services where fees are based on average usage for the month. ■

Sasser

continued from page 11

The organization has deployed Sana Security's Primary response software on its patched and unpatched servers, and configured it in advance to minimize potential Sasser worm exploits.

Other firms say worm-blocking barriers at the Internet gateway stopped Sasser's flood from striking them.

Andre Foster, vice president of IT at Cable Bahamas in Nassau, says he set up TippingPoint Technologies' UnityOne appliance to filter out Sasser after seeing Blaster sap the service provider's network capacity last year.

Mark Georgis, network administrator at Long Beach Transit in California, says he used Fortinet's FortiGate appliance to block Sasser coming in from the Internet and monitored for any worm outbreaks on the inside with Network Instruments' Observer tool. But luck was on his side, too, as Georgis acknowledges all the organization's patching wasn't up to date.

"I was scared to death," he says. The Sasser scare now has him setting up his LANDesk systems management tool to automate patch updates to desktops the minute they're available. ■

More online!

Fearful that you are overspending and overbuilding your security infrastructure? Learn the best way to evaluate, integrate and deploy to meet your true security needs at Network World's security event.

DocFinder: 1547

Correction

■ On page 37 of this week's issue, AT&T's anticipated capital expenditures should be noted as $2.5 billion. Because of our printing schedule, the change could not be made to that page before publishing this issue.

Topspin boosts InfiniBand switch

■ BY JENNIFER MEARS

InfiniBand vendor Topspin Communications is rolling out software it says will let users combine heterogeneous servers and storage into a pool of resources that can grow and shrink in response to application demands.

Currently, Topspin's switches connect servers into clusters using InfiniBand, a high-speed I/O switching fabric. The switches include gateways that let those servers link to Ethernet LANs and SANs via Fibre Channel so that servers need only connect to the Topspin switch, rather than supporting multiple cables for network, storage and server-to-server communication.

With the new software, called VFrame, an InfiniBand switch becomes the director in a utility computing environment, says Stu Aaron, vice president of marketing and product management.

Today, InfiniBand is used primarily in high-performance computing clusters, although analysts say it is making its way into corporate data centers in niche deployments such as database clusters.

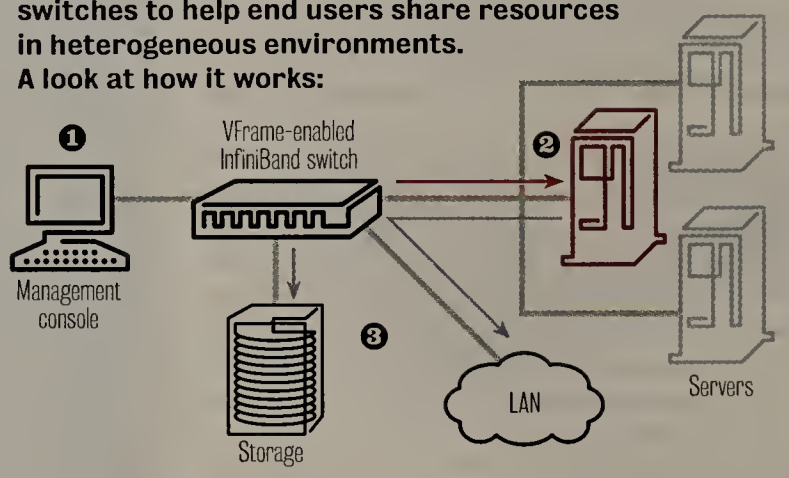
VFrame lets a switch respond to policies and rules in a variety of management tools and then provision servers — and the appropriate storage and network connectivity — on the fly and based on application needs. The VFrame software suite includes APIs that hook into management and provisioning tools that tell the switch what policies to look for and enforce.

In addition to hooking into management tools from major systems vendors such as Dell, HP, IBM and Sun, Topspin is partnering with other vendors such as VMware, Platform Computing, Oracle, Opsware and Qlusters to integrate support for those technologies into its InfiniBand switch.

VFrame is a next step for Topspin, which has been focusing on making its switches a part of utility computing and virtual server environments, analysts say. The software, available now at a starting price of $10,000, comes after Topspin's March introduction of a remote boot service that lets diskless servers be provisioned with applications, operating system, storage and I/O resources on the fly and over a network.

From the top

Topspin is adding intelligence to its InfiniBand switches to help end users share resources in heterogeneous environments. A look at how it works:



1. VFrame software embedded into a Topspin InfiniBand switch lets it link into management tools such as IBM's Tivoli Intelligent ThinkDynamic Orchestrator. A policy in the Tivoli software would tell the VFrame-enabled switch that when traffic reaches a certain point, another server meeting certain CPU and memory criteria should be brought online.
2. The VFrame-enabled switch finds that resource and triggers Topspin's remote boot capabilities to boot a server with the specified application and operating system over the InfiniBand network.
3. The switch also maps the newly provisioned server to the appropriate network and storage links so that it has access to clients and storage.

Up the food chain

"VFrame is Topspin's next piece of the puzzle as they move further and further up the food chain from being just an InfiniBand switch company to a company that's allowing the managing and the provisioning of physical resources," says Vernon Turner, group vice president of global enterprise server solutions at IDC.

Turner says other InfiniBand switch makers, such as InfiniCon Systems and Voltaire, offer management capabilities but don't integrate with third-party management and provisioning tools the way Topspin's VFrame promises to. The key for Topspin, he says, is to continue integrating rules, such as security policies, into the switch.

Burlington Coat Factory, based in Burlington, N.J., in April deployed VFrame on a Topspin 360 Server Switch with Ethernet and Fibre Channel gateways to run an Oracle 10G database on diskless IBM x345 servers running Linux. The database connects to a Hitachi-based SAN.

John Decatur, systems specialist at the retailer, says he expects the database performance to nearly double and expects savings as a result of hardware consolidation by using the VFram e-enabled switch.

"We also see a great savings in provisioning. Since they are [not dedicated] servers, we can redeploy them in a flash to where the workload is needed instead of using dedicated systems that are not fully utilized," he says. ■

RSA adds federated ID mgmt.

■ BY ELLEN MESSMER

RSA Security last week announced Federated Identity Manager, Java-based server software that can be used to exchange recognized "trust identities" among businesses to provide authentication and authorization for customers and employees.

RSA has included this identity management feature as an add-on to its Web access software, ClearTrust, but now is making it available as a standalone product, according to Howard Tieg, senior project manager. Federated Identity Manager supports the Organization for the Advancement of Structured Information Standards Security Assertions Markup Language (SAML) 1.0 and 1.1 specifications. The software also can use RSA SecurID tokens for strong authentication in lieu of simple passwords.

By fall, RSA plans to extend identity management software to address a number of requirements, such as mandated log-out controls or identity mappings of differing online identities, that haven't been part of SAML but are in demand from businesses.

RSA is backing the work that the Liberty Alliance Project and Web Services Federation have done in these areas. "There's quite a lot of fragmentation here," Tieg says. "But hopefully we can have convergence between them."

According to Burton Group analyst Daniel Blum, there are a handful of other vendors, including Oblix, which have products that compete with Federated Identity Manager. Netegrity has a product called AffiliateMinder, he adds, "but it only communicates with [Netegrity's Web access control software] SiteMinder and only receives, and doesn't send, assertions."

Wolters Kluwer, a global legal IS firm headquartered in Amsterdam, uses RSA's ClearTrust Web access software to provide customer access, and recently began deploying Federated Identity Manager.

"We're going to use it internally first in our tax and accounting divisions," says Mike Antico, CTO for the North America units. "We're using it to link the dozens of legacy systems for authentication we have. It's easier to do this than custom coding."

Antico said Federated Identity Management offers single sign-on to employees and customers by exchanging trust identities so that it's not necessary to use multiple passwords or other authentication to gain access to multiple services.

Federated Identity Manager is priced starting at $25,000. ■

NetworkWorld

EDITORIAL DIRECTOR: JOHN GALLANT
EDITOR IN CHIEF: JOHN DIX

■ NEWS
EXECUTIVE EDITOR, NEWS: BOB BROWN
ASSOCIATE NEWS EDITOR: MICHAEL COONEY
ASSOCIATE NEWS EDITOR: PAUL MCNAMARA

■ INFRASTRUCTURE
SENIOR EDITOR: JOHN FONTANA (303) 377-9057; Fax: (303) 377-9059
SENIOR EDITOR: JOHN COX (978) 834-0554; Fax: (978) 834-0558
SENIOR EDITOR: DENI CONNOR (512) 345-3850; FAX: (512) 345-3860
SENIOR EDITOR: TIM GREENE
SENIOR EDITOR: PHIL HOCHMUTH
SENIOR EDITOR: JENNIFER MEARS, (608) 836-8490; Fax: (608) 836-8491

■ NET.WORKER
MANAGING EDITOR: TONI KISTNER, (207) 878-8246

■ SERVICE PROVIDERS
SENIOR EDITOR: DENISE PAPPALARDO, (703) 768-7573
MANAGING EDITOR: JIM DUFFY

■ ENTERPRISE APPLICATIONS
SENIOR EDITOR: ELLEN MESSMER, (941) 792-1061
SENIOR EDITOR: CAROLYN DUFFY MARSAN, (703) 917-8621; Fax: (703) 917-8622
SENIOR EDITOR: ANN BEDNARZ
SENIOR WRITER: DENISE DUBIE
SENIOR EDITOR: CARA GARRETSON, (240) 246-0098

■ COPY DESK/LAYOUT
ASSISTANT MANAGING EDITOR: RYAN FRANCIS
COPY CHIEF: BRETT COUGH
SENIOR COPY EDITOR: JOHN DOOLEY
SENIOR COPY EDITOR: GREG CUSACK
COPY EDITOR: MONICA HAMILTON

■ ART
DESIGN DIRECTOR: ROB STAVE
ART DIRECTOR: TOM NORTON
SENIOR DESIGNER: BRIAN GAIDRY
SENIOR DESIGNER: STEPHEN SAUER

■ FEATURES
FEATURES EDITOR: NEAL WEINBERG
SENIOR MANAGING EDITOR, FEATURES: AMY SCHURR
OPINIONS PAGE EDITOR: SUSAN COLLINS

■ CLEAR CHOICE TESTS
LAB ALLIANCE DIRECTOR: CHRISTINE BURNS, (717) 243-3686
SENIOR EDITOR, PRODUCT TESTING: KEITH SHAW, (508) 490-6527
LAB ALLIANCE PARTNERS: JOEL SNYDER, Opus One; JOHN BASS, Centennial Networking Labs; BARRY NANCE, independent consultant; THOMAS POWELL, PINT; Miercom; THOMAS HENDERSON, ExtremeLabs; TRAVIS BERKLEY, University of Kansas; DAVID NEWMAN, Network Test; CHRISTINE PEREY, Perey Research & Consulting; JEFFREY FRITZ, University of California, San Francisco; JAMES GASKIN, Gaskin Computing Services, MANDY ANDRESS, ArcSec; GREG GODDARD, EDS; RODNEY THAYER, Canola & Jones
CONTRIBUTING EDITORS: DANIEL BRIERE, MARK GIBBS, JAMES KOBIELUS, MARK MILLER

■ NETWORK WORLD FUSION
EXECUTIVE EDITOR, ONLINE: ADAM GAFFIN
MANAGING EDITOR: MELISSA SHAW
EVENTS EDITOR: SANDRA GITTLEN
MANAGING EDITOR, ONLINE NEWS: JEFF CARUSO, (631) 584-5829
ASSOCIATE ONLINE NEWS EDITOR: LINDA LEUNG, (510) 768-2808
MULTIMEDIA EDITOR: JASON MESERVE
SENIOR ONLINE COPY CHIEF: SHERYL HODGE
SENIOR ONLINE GRAPHIC DESIGNER: ZACH SULLIVAN

■ SIGNATURE SERIES
EDITOR: BETH SCHULTZ, (773) 283-0213; Fax: (773) 283-0214
EXECUTIVE EDITOR: JULIE BORT, (970) 482-6454
COPY EDITOR: BRETT COUGH

EDITORIAL OPERATIONS MANAGER: CHERYL CRIVELLO
OFFICE MANAGER, EDITORIAL: GLENNA FASOLD
EDITORIAL OFFICE ADMINISTRATOR: PAT JOSEFEK
MAIN PHONE: (508) 460-3333
E-MAIL: first name_last name@nww.com

4:45PM SARAH VISITS DAD'S OFFICE 5:05PM SARAH DOWNLOADS FUNNYBUNNY.EXE 5:06PM NETWORK KILLS FUNNYBUNNY 5:14PM DAD TAKES SARAH TO KARATE PRACTICE

Sometimes threats don't look like threats. They look like your mobile workers, your sales department or your CFO's daughter. Even the innocent act of downloading a file—one that looks like any other, but is in fact corrupt—can create a costly security breach that can take your business off-line for days. So how do you defend against threats that take the shape of productive employees? A network with integrated security can detect and contain potential threats before they become actual ones. Whether they're worms, hackers or even well-meaning humans. Security that's about prevention. Not reaction. To learn more about how Cisco can help plan, design and implement your network security, visit cisco.com/securitynow. **SELF-DEFENDING NETWORKS PROTECT AGAINST HUMAN NATURE.**

THIS IS THE POWER OF THE NETWORK. NOW.

CISCO SYSTEMS

Start-ups scramble for venture dollars

BY CAROLYN DUFFY MARSAN

The number of venture capital deals involving network start-ups dropped to the lowest level in seven years during the first quarter. However, overall investment in these companies held steady, as venture firms concentrate their dollars on the start-ups that seem most likely to succeed.

These are the findings of the quarterly MoneyTree survey, which is put together by PricewaterhouseCoopers, the National Venture Capital Association and Thomson Venture Economics. Network World receives a subset of the MoneyTree data that targets investments in network hardware, software and services start-ups.

The latest MoneyTree numbers identify 321 deals involving network start-ups that closed during the first quarter. The amount of deal-making is down 14.6% from the previous quarter. The last time so few investments were made in network start-ups was the third quarter of 1996. While the number of deals went down last quarter, the average size of the deals was up slightly. Deal size averaged $6.74 million in the first quarter, compared with $6.65 million in the fourth quarter.

The sharpest drop was in first-round financing. Venture firms invested seed money in 11 network start-ups — the lowest number since the MoneyTree Survey began in 1995. Until now, the lowest number was 39, in the first quarter of 1995.

"There's a much greater emphasis on commercialization than there is on innovation," says Kirk Walden, national director of venture capital research at PricewaterhouseCoopers. "Revenues, customers — that's what VCs are interested in, as opposed to new ideas."

The start-ups that managed to attract first-round financing run the gamut from Groundwork Open Source Solutions, an Oakland, Calif., network-monitoring software provider that received the first $300,000 installment of a multimillion dollar commitment from Canaan Partners to TurnTide, a Conshohocken, Pa., provider of anti-spam systems that attracted $1 million from Innovation Philadelphia. TurnTide was named one of *Network World's* 10 start-ups to watch in 2004 (see www.nwfusion.com, DocFinder: 1970).

The largest first-round financing deal was an $8 million investment in Electriphy, which sells integrated circuits that provide fiber-like speeds over copper wires. Jim Apfel, CEO of Electriphy, says the Santa Clara start-up attracted seed money from Bay Partners and Lightspeed Venture Partners because of the next-generation DSL technology that Electriphy is developing.

"Venture firms look at the management team, the technology and the market. I think we hit on all three," Apfel says. "We have a very strong team, all with a modem chip background. We have technology that no one else has. That's our secret sauce. And the market for [very high-speed DSL] is one of the fastest-growing markets in access."

Electriphy formed in 2002 and funded itself until the recent venture capital financing. It is demonstrating integrated circuit designs to system vendors and their service provider customers.

Apfel admits it's difficult for network start-ups to attract seed and early-stage funding right now. "It's definitely harder to raise money, but the people who raise money have a better chance of success," he says.

Overall, the amount of money invested in network start-ups held steady, meaning that fewer companies got more dollars. Altogether, venture firms invested $2.16 billion in the first quarter, a number comparable to the $2.1 billion invested in the first quarter of 2003.

One factor that's helping prop up venture investments in network start-ups is that many companies are getting their fourth or later rounds of financing. Some of these companies are 10 or more years old, and they need continued investment until the IPO or acquisition markets become more active.

"The companies that have been around longer need more money whether it's an expansion round or a later-stage round," Walden says.

Most of the network start-ups that got funding were software ventures.

Software companies received $956 million, or 44%, of the total dollars. Software accounted for more than double the next-closest category, which was networking and equipment start-ups. They received $389 million, or 18%, of the total dollars.

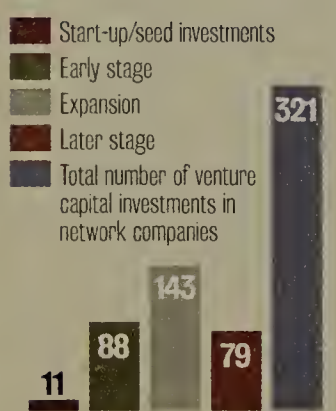
Security and storage companies dominated this quarter's top 10 deals, which ranged in size from $24 million to $42 million (see graphic, above).

The MoneyTree survey trends ultimately might benefit enterprise buyers of network products and services, Walden says.

"It's not all bad that companies have to have some customers before they get backing. That's going to make it harder for the enterprise to get innovative products, but the start-ups that emerge should do better in the long run," he says. ■

Slim pickings

The 11 seed investments in network companies is the fewest recorded in the MoneyTree Survey since it began in 1995.



The top 10

Security and storage technology dominated first-quarter venture deals.

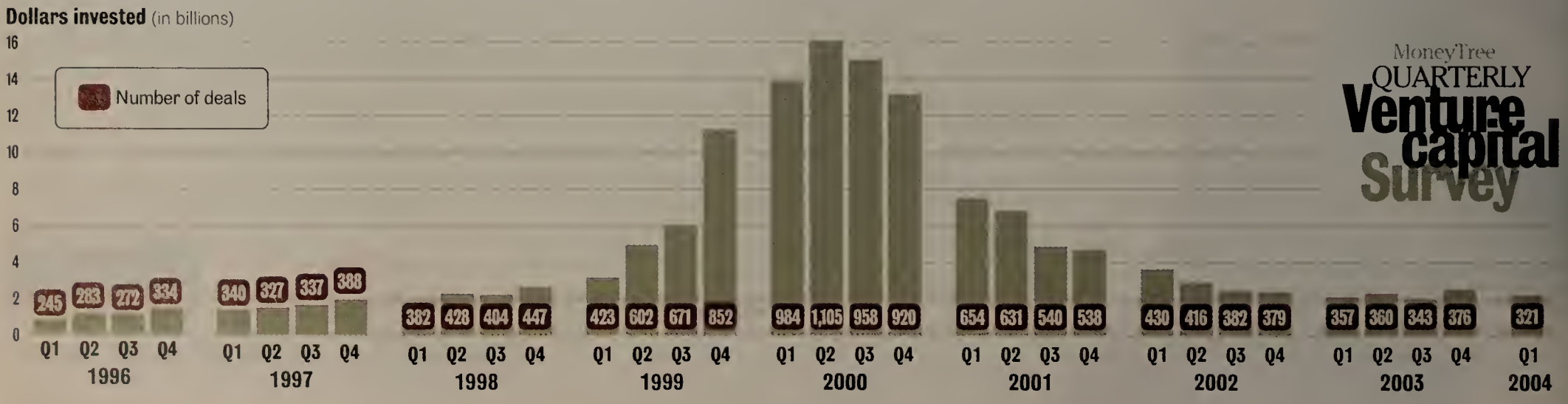
Company	Funding	Headquarters	Primary business
CipherTrust	$42M	Alpharetta, Ga.	Enterprise security software and hardware.
Vonage	$39.9M	Edison, N.J.	VoIP services.
Fortinet	$39M	Sunnyvale, Calif.	Network protection systems.
nLight Photonics	$32.3M	Vancouver, Wash.	Optical fiber infrastructure products.
3PAR	$32M	Fremont, Calif.	Enterprise storage systems.
AdvanTech Solutions	$26.2M	Tampa	Human capital management technology.
OutlookSoft	$25M	Stamford, Conn.	Financial analytic software.
Softek Storage Solutions	$25M	Sunnyvale, Calif.	Data management solutions.
Starent Networks	$25M	Tewksbury, Mass.	Datacom equipment for wireless networks.
Speakeasy Service	$24M	Seattle	Independent broadband service.

More online!
A complete list of first quarter funding deals. **DocFinder: 1961** **www.nwfusion.com**

SOURCE: MONEYTREE SURVEY

Venture deals drop to seven-year low

But dollars invested in network start-ups hold steady.



SOURCE MONEYTREE SURVEY

Get Your Site In Compliance and Avoid License Violations

NEW! VERSION 3.1

UNLICENSED SOFTWARE FOUND

PATCH SUCCESSFULLY APPLIED

SOFTWARE UPDATED TO LATEST VERSION

NON-STANDARD HARDWARE FOUND

MANUAL TO AUTOMATED IN UNDER AN HOUR

The affordable way to automate your systems management

No steep learning curve. No special training. No wonder so many system administrators are raving about new Sitekeeper 3.1! Sitekeeper is the affordable way to track down and deploy missing patches, deploy software and updates, track license compliance, and perform hardware and software inventories—all within minutes of installation. You'll be amazed at the time you save. Imagine never having to perform manual machine-by-machine updates and inventories again!

Sitekeeper doesn't require dedicated servers or expensive databases, so it easily fits in your budget. Sitekeeper runs on any NT/2K/XP machine and manages clients running any version of Windows, from 95 to Server 2003. Install Sitekeeper and start managing right away. Cut out complexity and increase productivity with NEW Sitekeeper 3.1!

DOWNLOAD FREE
SITEKEEPER 3.1 TRIALWARE NOW:
www.executive.com/nwsk32
or call 1-800-829-6468 Ext.: 4276

System Management Software—*Simplified*

Executive Software
Focused Development of System Management Tools

HP storage package targets compliance rules

■ BY DENI CONNOR

HP last week introduced a hardware and software cluster designed to help companies play by new government rules that mandate how unstructured data such as electronic messages should be stored.

The StorageWorks Reference Information Storage System (RISS), like compliance-storage offerings from vendors such as Archivas, EMC and Veritas Software, comes in response to new data- and document-handling regulations such as Sarbanes-Oxley and the Health Insurance Portability and Accountability Act.

RISS consists of a cluster of 20 ProLiant DL380 servers, each containing 420G bytes of storage capacity. A metadata repository includes unique references to the e-mail and text documents stored on the servers. Each node in the cluster, which HP refers to as a "storage smart cell," is mirrored to another cell to create a highly available, fault-tolerant configuration.

"HP does something pretty slick with the storage smart cells — when you add storage, you also add processing power and an archival engine, so it can scale pretty high," says Diane McAdams, a senior analyst with Data Mobility Group. "Searching for data can really bog a system down, so it's important to be able to add processing power as you add storage."

As data is written to a RISS disk, it is assigned a unique identifier, which HP says makes its retrieval easier. This metadata reference also caries a time stamp and digital signature information.

The system, which is designed for archiving and retrieval, came about through HP's acquisition of Persist Technologies last year.

Storing fixed-content information to comply with state and federal regulations is such a hot market that The Yankee Group predicts it will roughly quadruple from 308,000 terabytes last year to nearly 1.25 million terabytes in 2006. Enterprise Storage Group says fixed-content or reference information will represent 54% of all data by 2005 and will grow faster than traditional transaction-based data.

Mark Deck, vice president of technology for NMHC, a pharmacy benefits management company in Port Washington, N.Y., is weighing his options.

"We have a lot of data we need to keep [because of government regulations] — data like claims data, adjudication data," he says. "We have been looking for software that catalogs data and gives it a reference so you can find it again."

Priced at about 10 cents per megabyte, HP's RISS is not cheap, although HP says it is less expensive than storage systems not specifically designed to handle fixed content. Archivas comes in at the low end of the price scale at about a penny per megabyte, and EMC's market-leading Centera costs about 2 cents per megabyte, although this does not take into account that EMC charges extra for software. HP charges about $425,000 for a 4T-byte configuration and includes a server interconnection switch and firewall. ■

More online!

Want to know how compliance laws affect you? Read our IT Briefing Webcast on Sarbanes-Oxley and related issues. Senior Editor Ann Bednarz offers insight on the topic. **DocFinder: 1127**

Infrastructure

■ LAN/WAN SWITCHES AND ROUTERS
■ ACCESS DEVICES ■ SERVERS ■ VPNS
■ OPERATING SYSTEMS ■ NETWORKED STORAGE
■ VOIP ■ WIRELESS NETWORKS

Short Takes

■ **Red Hat** last week unveiled a version of the Linux operating system software for corporate desktops. The software, called **Red Hat Desktop,** will be a companion product to Red Hat's current desktop offering, Red Hat Enterprise Linux WS. Red Hat Desktop will be targeted at corporate users rather than the engineering, software developer and CAD users who used Red Hat's WS. Red Hat Desktop will include a selection of client software, including Open Office 1.1, the Evolution mail client, the Mozilla Web browser, and the Citrix Independent Computing Architecture client. A 10-unit starter pack, including the Red Hat Network Proxy Server software, will cost $2,500. A 50-unit Satellite Server Starter Pack will cost $13,500, with support for each additional 50 desktops costing $3,500.

■ **Hitachi Data Systems** recently announced a high-end storage array and enhancements to its HiCommand management software. The **Hitachi Thunder 9585V** is the company's largest storage array. It can store up to 64T bytes of data and can attach to as many as 1,024 servers. Hitachi also introduced HiCommand Path Provisioning, which provides end-to-end provisioning of storage resources, and HiCommand QoS for Sybase, which ties storage resources and availability to the application. HiCommand Path provisioning costs $6,000; HiCommand QoS for Sybase starts at $5,000; a Thunder 9585V with seven 146G-bye drives starts at $100,000.

■ **HP** next month plans to ship a multiprocessor daughtercard that will let customers double the number of Itanium 2 processors supported in their Integrity servers. The **MX2** dual-processor module will be compatible with Madison Itanium processor sockets so customers can slide the two-processor module into slots now used for one processor, HP says. The MX2 will be available for the Integrity rx4640, rx7620 and rx8620 servers starting in June. Pricing will start at $16,700, $56,000 and $133,000, respectively.

Q&A Extreme changes

Extreme Networks has changed a lot in a year. Since last spring, the vendor has launched a wireless product line, debuted its next-generation 10G bit/sec switch (the BlackDiamond 10K), and revamped its core switch software with a modular, Linux-based software operating system — ExtremeWare XOS. Extreme's CEO Gordon Stitt talked with Network World *Senior Editor Phil Hochmuth recently about the changes in the company, the competition and some product directions.*

Extreme's focus seems to be shifting from a core switch vendor to a more end-to-end approach. Why make this shift?

Different people have different perceptions of how much we've changed. I think it comes down to a change in the market. When we first started out, performance was the key thing. When you look back into the late 1990s, it was all about getting more bandwidth. But when things slowed down in 2001, 2002, there was tons of bandwidth installed. Now it comes down to a different set of issues. People are more concerned about security than they are about bandwidth. The whole talk about convergence is a big deal because it fundamentally can transform. We have taken a more systems approach. . . . This is very different from the speeds and feeds of yesteryear. Don't get me wrong, performance still counts. You can't go out there and say we run at 50 megabits and 100 megabits. You have to run at wire speed. But the first criteria isn't performance, it's 'How do I solve this problem?'

But Cisco has a big head start being an end-to-end vendor. How do you catch up?

They are the end-to-end leader, and they do have a head start. But they do it in a very proprietary environment. It's like the IBM AS/400; you used to buy your ERP applications and computers from the same company. You wouldn't even consider doing that today.

Networking is just in an earlier stage, like that. Cisco is dominant in the end-to-end market. But 10 years from now, that will be an anachronism. You'll choose best of breed just as you do today in computers and applications and communications devices.

See Extreme, page 26

iSCSI use booms, early adopters swoon

■ BY DENI CONNOR

NEW YORK — IP storage-area networks got a boost at the Storage Decisions show in New York recently as ardent users said that deploying iSCSI was love at first sight.

iSCSI EARLY ADOPTERS

Early adopters made it clear that they weren't using the iSCSI protocol as a replacement for more expensive Fibre Channel SANs, but were primarily adopting it for its cost, ease of installation and as a platform to run less business-critical applications such as Microsoft Exchange or SQL Server. Most say they will keep their database and transaction-intensive applications on Fibre Channel SANs.

The iSCSI protocol lets block-level storage data be transported across the IP network. It sits on top of Ethernet and can be facilitated by adding adapters to servers with their own direct-attached storage or by connecting servers and external storage to an iSCSI gateway device or switch.

To implement iSCSI, users can purchase an Ethernet adapter for $140, put in a server, load a free Microsoft iSCSI driver on it and connect the server through a Gigabit Ethernet switch to an iSCSI concentrator, which can be bought for as little as $14,000. By contrast, a typical Fibre Channel adapter costs $1,300 and a Fibre Channel switch costs $23,000.

A Merrill Lynch/McKinsey study showed that the total software/hardware cost of an IP SAN, which stored 2T bytes of data, is $77,000; a Fibre Channel SAN of the same size would cost more than $180,500. Based on the same study, the total cost of ownership of an iSCSI network is $117,400 compared with $231,380 for a Fibre Channel SAN.

Ken Walters, senior director for enterprise platforms at the Public Broadcasting Service in Alexandria, Va., is no neophyte to storage. He already has a Fibre Channel SAN consisting of an IBM Enterprise Storage Server (code-named Shark) connected to his servers via a Brocade Silkworm switch. It stores 3T bytes of data.

When he considered expanding his SAN to link a bunch of servers with direct-attached storage, Walters, who runs IT on a nonprofit budget, chose iSCSI.

"The rest of my machines I wanted to consolidate less expensively," he says. "I needed a cost-effective way to get SAN storage to my IBM BladeCenter servers."

Another attraction of iSCSI for Walters was its simple installation. Because the iSCSI protocol runs on top of Ethernet, it behaves, is installed and is managed in the same fashion.

"I never believe a vendor when they say in 20 minutes you can be up and running," Walters says. "In this case, we could."

Walters, who started testing iSCSI in 2002, installed StoneFly Networks' Storage Concentrator i3000, which connects to his IBM BladeCenter servers and consolidates their storage. He runs less business-critical SQL Server, Exchange and Web applications on

See ISCSI, page 26

TOLLY ON TECHNOLOGY

Kevin Tolly

Then there was one — WAN/LAN combo arrives

While every enterprise branch office requires LAN and WAN features, an inspection of the communications closet almost always reveals that separate boxes are implemented for each. Adtran is trying to change that.

In a flurry of branch-office productivity by the vendors, Adtran joined the ranks of those that have had us validate their branch-office offering head-to-head against Cisco's. The company's NetVanta 1224R offers a full-fledged router and LAN switch in a 1U box. It's unique, but will it fly?

Because these devices "talk" using Ethernet, there is no reason that they have to be boxed together or tightly coupled in any way. On the other hand, there is nothing that stands in the way of them being integrated, either. There are the obvious advantages of reduced footprint, integrated management but, if it is such a great idea, one might ask, why is Adtran, an admitted "follower," one of the first to do it for the enterprise?

Well, historically, there's been a conscious choice by many vendors to "stop at the edge" and leave the WAN to others.

While the existence of stacks of WAN protocol building blocks has made the job easier today, vendors in the mid- to late 1990s venturing into the WAN had to be content with a significant amount of development that had little in common with what they were doing on the LAN.

A combination of aggressive goals — in features to implement and units sold — caused many vendors, especially start-ups, to decide that the WAN wasn't worth the trouble. After all, a branch office might need dozens of LAN ports but usually could get by with just one WAN port. And, unless you could be sure of providing the headquarters side of the WAN connection, you could find yourself embroiled in finger-pointing with the likes of Cisco or Nortel whenever a WAN glitch occurred.

So if you look at companies such as Foundry Networks and Extreme Networks, and, earlier companies like Madge Networks, they simply chose not to play in the WAN arena. So given that different companies typically provided the LAN and the WAN gear — or different divisions of major players — the "separate box" syndrome became the "standard."

If Adtran is successful in gaining not only market share against Cisco but acceptance of the integrated switch/router, others surely will follow.

Ironically, integrated LAN/WAN boxes are nothing new — and actually thrive — but in a different arena. Virtually all of the small office/home office gear you encounter today and a lot of low-end business "routers" provide LAN switch ports. It just hasn't become de rigueur in the enterprise.

If Adtran is successful in gaining not only market share against Cisco but acceptance of the integrated switch/router, others surely will follow.

For companies such as 3Com that make enterprise-class gear in both categories, integration should be a snap. For companies such as Larscom and Tasman that are really focused on the WAN, the job would be a bit harder. And they might be faced with a credibility gap, given their lack of presence in the LAN switching space.

For other edge switch vendors a strong acceptance of integrated LAN/WAN would cause them to divert resources from previously defined goals to build a hybrid offering.

For managers of branch-office networks, "roll up" of features — LAN/WAN, security suites, etc. — can simplify their lives. That's the theory, at least. This year we've got a chance to see how it works in practice.

Tolly is president of The Tolly Group, a strategic consulting and independent testing company in Boca Raton, Fla. He can be reached at ktolly@tolly.com.

RouteScience gear now listens to applications

■ BY TIM GREENE

RouteScience Technologies last week announced upgrades to its route-optimization software that the company says will better help customers pick the best Internet connection when there is more than one to choose from.

Until now, RouteScience gear made routing decisions based on the performance of ISP networks, but without considering the needs of individual applications. Some applications might tolerate packet loss, but not jitter; others might tolerate delay but not packet loss.

Now Adaptive Networks Software (ANS) assesses how well specified applications are performing and, if they perform below set policies, changes the path the application takes to the Internet to boost performance. If there is no path that boosts performance to meet the policies, the software can notify IT staff to take action.

Other route-optimization vendors include Opnix and Proficient Networks, the latter of which added application awareness last year.

RouteScience gear sits on LANs that have multiple Internet connections provided by more than one ISP — so-called multihomed sites. The equipment is a peer to Border Gateway Protocol router and sends updates to the routers to select the best route. Policies define the best route using delay, jitter, latency, packet loss and cost of the connection as parameters. The software was previously blind to the needs and performance of individual applications, which can be critical, the company says.

"Say we did voice over the Internet," says Scott Jesters, senior network engineer for Sutter Health hospital network based in Sacramento, Calif. "We'd want to do policy-based routing because it could make a huge difference." Delay and jitter could make voice traffic unintelligible. "End users would notice that it didn't sound as good," he says.

Sutter depends on RouteScience gear to decide whether its SBC or MCI Internet connection is working better. With the new software, Sutter also can generate reports about how well applications are responding so IT staff can understand end-user experiences with particular applications. These reports help in planning how to improve performance, he says.

ANS is divided into core software and application modules. Customers start off with core software and at least one of five available application modules (see graphic).

ANS Version 5 is available now. The various modules are priced separately based on the throughput they can handle. A single module on a device with 500M bit/sec throughput costs $30,000. ■

Fine-tuning for applications

RouteScience modules configure its gear to select the best ISP for supporting specific applications and to report on how well those applications perform.

Module	Applications supported
Enterprise	Siebel, Oracle, PeopleSoft, i2 and others.
Web	IBM WebSphere, BEA and other.
Voice over IP	Avaya, Nortel, Cisco.
Realtime Multimedia	Polycom and others.
Streaming Media	RealNetworks and others.

Veritas updates storage mgmt. software

■ BY DENI CONNOR

Veritas Software has enhanced its CommandCentral storage management software and services to give customers a portal from which they can view storage consumption and manage service levels and costs.

The company rolled out Command Central Storage 4.0 and Command Central Availability 4.0 and will now let users access its management products via a Web-based console. With Command Central Storage 4.0, Veritas will meld the storage-area network management of its own SANPoint Control with the storage resource management (SRM) of its Storage Reporter. SRM helps customers cut out wasted storage hardware purchases.

With the Availability 4.0 package, users can view storage and server clusters, and it lets customers monitor operational control so service-level agreements can be met. CommandCentral Availability assures that applications are highly available and increases IT staff productivity.

Further, the company detailed a road map for the integration of the Ejasent products it acquired in January. Veritas will introduce MicroMeasure, software that allows usage-based metering of storage and charge-back billing. By year-end, MicroMeasure is scheduled to be available as part of a future version of CommandCentral Service. Ejasent's UpScale, which lets applications move from one server to another without disruption, will be added to Veritas Cluster Service in the first half of 2005.

CommandCentral Storage 4.0, CommandCentral Availability 4.0 and CommandCentral Service 4.0 are expected to be available in July. The individual modules start at $20,000. ■

MEGABYTE:

What not having a Linux strategy can take out of your bottom line.

If you're paying unreasonable licensing fees for software that constantly needs security patches, you're getting eaten alive. But there's a solution. With SUSE® LINUX, Novell® can help you unleash the cost-saving power of a flexible, end-to-end open source strategy. Only Novell supports Linux from desktop to server, across multiple platforms. We'll integrate our industry-leading security, management and collaboration tools seamlessly into your environment. We'll provide award-winning technical support 24/7/365, and train your IT staff to deploy Linux-based solutions. And we'll make sure your open source strategy actually meets your number-one business objective – making money. Call 1-800-513-2600 to put some teeth back into your tech strategy, or visit www.novell.com/linux ⊕ WE SPEAK YOUR LANGUAGE.

SUSE
A NOVELL COMPANY

Novell

Wireless mgmt. wares on tap at N+I

Symbol and Netmotion Wireless packages designed to ease control of large mobile environments.

■ BY JOHN COX

Letting users better manage their wireless and mobile computing environments will be a prime focus for new vendor products at this week's NetWorld+Interop 2004 Las Vegas show.

For example, Symbol Technologies will unveil a wireless LAN (WLAN) management product — the Symbol Mobility Services Suite (MSS) — which is a set of management programs designed to work together, with a Web-based GUI.

The package includes Symbol's existing WLAN management products, such as AirBeam Manager, but adds a battery of new features, a new GUI and a unique package: The software comes loaded on a rack-mounted IBM eServer. Also new are bits of code, called agents, which run on the wireless clients, access points and switches to be managed.

The Web GUI, accessible via any Web browser, ties the programs together, and lets administrators visually sort the WLAN elements, including users, by groups, locations, user classes, applications and other criteria. Using the Web screens, administrators reconfigure devices, update their software, and monitor and analyze radio signals.

Using the Web screen's tabs, for example, an administrator can see the status of the access points at a given location or the software version of an inventory control application on all wireless handhelds issued to warehouse staffers.

The agents are a vital part of the new management product. They monitor a range of functions on devices. When the agents find an anomaly or specific change, they send an alert back to the MSS management console. An SNMP trap can pass these alerts back to an enterprise management system such as Computer Associates Unicenter or HP Openview.

The agents also make it possible to monitor the results of scheduled software installations, such as a new application version or a patch.

Future releases of Symbol's WLAN switches, thin access points and PocketPC-based handhelds will ship with the agents already loaded. For now, customers can add the software to WLAN devices like any other software update, says Gary Kovacs, Symbol's senior director of product management.

Version 2.0 of MSS, due out later this year, will have additional agents, some from partners, for a growing range of other client devices, and access points typically found in enterprise wireless deployments, such as older DOS-based bar code scanners and PalmOS PDAs.

A tool set, MSS Studio, can be used to build custom management applications that can run on various operating systems.

The first version of MSS will ship in June and will be showcased at N+I. Symbol had not released pricing.

Meanwhile, Netmotion Wireless has reworked its device management software to support thousands of mobile devices in the enterprise. The original client-server software includes a built-in VPN, single sign-on and a program to create and administer access and connection policies for mobile users.

Renamed Mobility XE, the new release for the first time runs on more than one server. This capability lets the software balance the management load over two or more machines, and automatically shift loads among the servers if one of them fails or has to be shut down.

Netmotion added a new component, called Mobility Warehouse, which is a distributed directory that can store millions of configuration settings for servers and clients. Previously, this data was stored in the Windows Registry of a single machine. Mobility Warehouse, which is based on Sun's Lightweight Directory Access Protocol SunOne Directory Server, can handle more settings and distribute them across multiple servers.

"The Web interface is really simple to navigate. Clicking on the different tabs gets me different views [of the net] or activates different functions," says Gus Menoudakis, firewall and network administrator for Diamond Cluster International, a Chicago management consulting company.

Menoudakis rates this feature highly, along with the high-availability capability.

For small to midsize deployments, pricing starts at $15,000 for 100 users. Additional user licenses range from $110 to $140 each, depending on the volume. A second server license is $5,000. For large corporations, 1,000-user licenses and unlimited servers is $105,000. ■

More online!

In this Webcast, Craig Mathias, principal at Farpoint Group, leads you through the pros and cons of wireless networking. Mathias keynoted Network World's Wireless LANs Technology Tour and shares highlights from his presentation.

DocFinder: 1950

Aventail boosts VPN control package

■ BY PAUL ROBERTS

Aventail last week unveiled new Secure Sockets Layer VPN software that promises to help users clean up files on client machines, make it easier to create access-control policies and prevent unsecure clients from logging on to networks.

The company rolled out Anywhere Secure Access Policy (ASAP), the technology platform used for Aventail's EX-1500 SSL VPN appliance. The package lets managers create and deploy user-access policies and configure client options. Among other changes, ASAP 7.1 improves Aventail's Cache Control feature, which removes data sent to remote clients during SSL VPN sessions after those sessions have ended, says Sarah Daniels, vice president of product management and marketing at Aventail.

Aventail's products have long cleaned temporary files, e-mail file attachments, cookies, Web pages and other data left on machines. The new software is more thorough in searching out data that is temporarily stored by Microsoft's Internet Explorer Web browser during SSL VPN sessions. The new Cache Control feature is thorough enough in removing data to comply with the U.S. Department of Defense's clearing and sanitizing standard, known as DoD 5220.22-M, she says.

An optional feature, called Aventail Secure Desktop, provides even more-secure handling of SSL VPN data by creating a virtual workspace and temporary, encrypted "vault" on client machines where session data is downloaded and stored. The workspace and vault are destroyed at the end of each session, erasing any data stored there, Aventail says.

Aventail also improved the policy management features in ASAP 7.1. Previous versions of ASAP required administrators to write access policies using a complex syntax. A new user interface and an object-based policy model in Version 7.1 let administrators browse Lightweight Directory Access Protocol, Microsoft Active Directory or RADIUS directories to select users, user groups or policies, automatically building the policy language.

Aventail now faces competition from a number of technology companies, including established players in the network equipment market such as Cisco.

The new management feature will speed the creation of access policies and reduce typos and other user errors, Daniels says.

Finally, Aventail says it is partnering with three companies to help its customers secure their networks from vulnerable or compromised SSL clients. Aventail is integrating support for Zone Labs' Clientless PC Security and WholeSecurity's Confidence Online products. Customers using those products will be able to use them seamlessly with Aventail's EX-1500 appliance to inspect remote clients for virus infections or the presence of spyware or Trojan horse programs before letting users establish an SSL VPN connection, Daniels says.

SSL VPNs are an increasingly popular technology for providing remote users with access to network resources such as e-mail, software applications and network file servers. As opposed to VPNs that use IPSec, SSL VPNs rely on the SSL protocol, which is a part of most common Web servers and Web browsers and is widely used to secure e-commerce transactions. As a result, SSL VPNs are typically "clientless," meaning they do not require a separate software application to be installed on the remote user's machine. That lets remote users securely connect to networks from any computer with an Internet connection and a Web browser.

An early leader in the market for SSL VPN, Aventail now faces competition from a number of technology companies, including established players in the network equipment market such as Cisco, which added SSL VPN features to its VPN 3000 Series Concentrator in November.

In recent weeks, Aventail and MCI announced they will partner to deliver SSL VPN technology, and Aventail plans to introduce new features to its Remote Access suite of services, including technology to detect online fraud and scramble user passwords sent over MCI's global network.

Aventail has not seen any decrease in business as a result of new competition from Cisco and others, according to Daniels. She says Aventail's head start in developing SSL VPN products will keep the company safe from competition in the short term. In the long term, Aventail must continue to innovate and be a technology leader to survive, she says.

Roberts is a correspondent with the IDG News Service's Boston bureau.

More online!

There's a lot to know about how SSL VPNs can help you offer secure remote access across the enterprise. For the latest information and expert insight, tune into our IT Briefing Webcast featuring Senior Editor Tim Greene.

DocFinder: 1128

Q A

Extreme

continued from page 21

Why was it important for Extreme to get into wireless?

I used to look at it and say, 'Well if your network is already wired, why do [wireless]?' The value in wireless is new kinds of devices being connected to the network. That makes it very different from wired Ethernet and creates different challenges. It's not terribly hard to authenticate a wireless laptop today, but how do you authenticate a piece of medical equipment? Or authenticate a camera or a thermostat on the wall? If you look at it that way, I think wireless is very strategic to us. It's going to happen in a big way. For me, wireless was a very strategic investment and critical to being able to continue to be the alternative to Cisco in the large enterprise.

If users will move to best-of-breed products, there are hundreds of wireless start-ups to choose from. Does that scare you?

There are hundreds of start-up companies in wireless. There are too many and there are too many by many times. But there are some interesting areas that people have addressed niches. I frankly think that a lot of people doing the wireless switches don't really have any unique capabilities, and ultimately they will become subsumed by the incumbent vendors. We have a solution that may not do 100% of what every wireless switch vendor does, but it does 90% and it will do the other 10% in six months. We may be a little bit behind at any given time, but not for very long. Ultimately what's key there is integrating with the wired network. If you look at voice over wireless over IP, you look at someone roaming and disconnecting his laptop. You want a single unified interface. People don't want to have two consoles. If we're going to go to an integrated voice/data network to get away from the management of both, we're certainly not going to separate them again and have a wireless and wired access for clients.

That said, there are opportunities and other areas where there is value, for example location services. Some of the [radio frequency] design. There is going to be a lot of interesting ways people are doing roaming. There will be some interesting technologies from some of these start-ups that will become more widely used.

What is the climate for enterprise IT spending?

If you look at the enterprise, it's tough to forecast spending. I read all these reports from financial analysts and industry analysts. It's tough to say what this year's going to be like, other than to say that there is a lot of activity. But I think buying habits have changed forever. Bandwidth and speeds and feeds — I think that's old news, like I said. I don't think you're going to see people going out saying, 'I need something faster.' It's going to be driven by a change, likely a business change.

What areas in Extreme's research and development are you excited about?

Looking back over the last couple of years, [ExtremeWare] XOS was more than a three-year effort, so a lot of effort. The new BlackDiamond 10K in December, which uses our 4GNSS technology, that was a three-year investment in ASICs, a very complex system with a lot of carrier-type capabilities. So if you look at all that, those have been big investments. There are follow-on investments, clearly. I think you'll see more emphasis on software and XOS capabilities. The other area is unified access, which is again mostly software, although we do a fair amount of RF. We'll look at really filling out the capabilities of XOS and making partnerships there.

As you move more toward software, does that take away from your hardware R&D?

We can do both. In our stackables, we've moved to merchant silicon in all of the new products we've introduced in the last six to nine months. Because for that type of product, that functionality is good enough. The focus on our ASICs is on the core of the network and the aggregation layer. We're not trying to build ASICs for all levels of the network. Our focus is on the core. We have a lot more software folks as a percentage today than we did than a few years ago. ■

ISCSI

continued from page 21

the blades, which have the Microsoft iSCSI LAN driver installed.

The iSCSI allure

Thomas Reynolds, senior executive director for IS and technology at Idenix Pharmaceuticals in Cambridge, Mass., also saw the allure of iSCSI.

Like Walters, Reynolds, who has 12 Windows 2000 servers running Microsoft Exchange, was skeptical of the vendors' claims of easy installation.

Reynolds wanted a highly available network with no planned downtime. He installed LeftHand's iSCSI Network Storage Module, which contains Advance Technology Attachment storage. The Network Storage Modules connects to the IP network; servers on the network can access information via iSCSI.

"We couldn't invest money in SANs, so we chose iSCSI because it is less expensive," Reynolds says. He runs iSCSI traffic on separate segments of the IP network from network traffic.

Michael Davies, chief implementation officer for satellite communications provider Sawtel in Hartford, Conn., is deploying iSCSI for 8,000 clients. He uses Adaptec iSCSI host bus adapters to connect his servers to storage.

Although iSCSI performs at only the speed of the underlying Ethernet network, Davies says the performance of it was just fine compared with Fibre Channel's 2G bit/sec.

"ISCSI was ideal — about a sixth the cost of deploying a SAN," Davies says. "The iSCSI solution performs very well. Data throughput was very high — 90M to 100M bytes per second."

Robert Bellanti, vice president of data center engineering for KeyBank National Association in Albany, N.Y., is another fan of the low-cost technology.

"ISCSI's on our radar screen," says Bellanti, who has not yet deployed iSCSI. "The challenge of the [Fibre Channel] SAN is that host bus adapters are more expensive [than iSCSI], and deploying SANs snowballs the expense. We are looking at less-expensive options."

Bellanti has 40T to 50T bytes of direct-attached storage in his network and 50T bytes of SAN-attached storage on EMC Clariion and Clariion boxes, and HP Enterprise Virtual Arrays and Enterprise Modular Arrays.

Analysts say that one of the biggest drivers of iSCSI adoption is Microsoft's release of an iSCSI driver last year.

"ISCSI deployments are still relatively recent," says Randy Kerns, senior partner for analyst firm The Evaluator Group. "Windows is the sweet spot right now for iSCSI with Exchange and SQL Server."

The Microsoft connection

Microsoft's endorsement of iSCSI was a boon to Network Appliance, whose users can now install Exchange and SQL Server on the company's network-attached storage devices and receive application support from Microsoft.

"A lot of applications such as SQL Server and Exchange [are written to] require direct-attached storage and iSCSI allows that," says Mike Casey, director of technical operations for Cross Country Healthcare in Boca Raton, Fla. Casey has two Network Appliance FAS940c clusters.

Although users are generally moving away from direct-attached storage, The Yankee Group estimates that some 40% of storage still is attached directly to servers.

"We have an IBM SAN and looked at the cost and performance associated with it, but we found the administration was so much easier on iSCSI," Casey says. "The iSCSI host bus adapters are typically a third of the cost of Fibre Channel. The cabling is all Category 5. The switches are a fraction of the cost."

On the dark side

Analysts say that despite user enthusiasm, there are downsides to the technology.

"Other than Network Appliance, there are no major storage system vendors that support iSCSI," says Tony Asaro, senior analyst for Enterprise Storage Group. He says although EMC's DMX array supports iSCSI, it is too big and powerful a box to house less business-critical applications.

Asaro says that his firm knows of more than 450 iSCSI production SANs. Network Appliance claims 100 of them.

"Like any technology, there is an adoption curve that takes time for the mainstream to embrace," Asaro says. "As the storage system leaders begin to support iSCSI across all their product lines, more customers will consider it as being a viable choice."

IDC says that the iSCSI market will boom from more than $1 billion this year to $5 billion in 2007. ■

The iSCSI bandwagon

A sampling of recent iSCSI product announcements.

Company	Product	Description	Price
ADIC	Scalar tape libraries	Lets tape library connect to an iSCSI network.	Starts at $15,000
American Megatrends	StorTrends iTX iSCSI	Connects servers to storage via iSCSI.	Starts at $7,000
DataCore	SanMelody	Turns servers into iSCSI disk arrays.	Starts at $1,000
FalconStor	ISCSI Storage Server	Lets a Windows Storage Server use iSCSI.	Starts at $2,000
Snap Appliance	GuardianOS 3.0 operating system	Lets Snap Server NAS devices run iSCSI.	Included with its Snap NAS appliances

DE-COM-PLEX-IFY.

QWEST iQ NETWORKING™ BRINGS RADICAL SIMPLICITY TO NETWORK MANAGEMENT.

You can dream up any number of ways to put your network to good use. That's the easy part. Then you have to figure out how to make it work—get all your vendors in sync, redefine roles, eliminate that capital expense roadblock, reconfigure interconnections, etc., all while supporting your time-sensitive apps and ensuring the security of your network. But with Qwest, that second part can be every bit as easy as the first part. Just tell us what kind of performance you need to enable your business applications, and we'll make sure you get it. On your terms. Guaranteed. So call to find out more about a network that's tuned to your needs. And start dreaming up new stuff to do with your network.

1 800-506-0663
or visit qwest.com/networksolutions

Qwest
Spirit of Service™

VOICE SOLUTIONS **DATA** SOLUTIONS **INTERNET** SOLUTIONS **MANAGED** SOLUTIONS

Finisar Receives Frost & Sullivan Market Leadership Award

2004

FROST & SULLIVAN

Market Leadership Award

Citing it's dominant market presence and strategic focus on technology, Frost & Sullivan has awarded Finisar Corp. its 2004 Award for Market Leadership in the Fibre Channel Test Equipment market. The Mountain View, Calif.-based research firm presents its Market Leadership Award to those companies that have garnered significant market share through a combination of superior strategy and demonstrated leadership qualities.

"With a compelling 45 percent market share in the fibre channel test arena, to say that Finisar dominated the market in 2003 would clearly be an understatement," said Sankar Prakash, Analyst, Communication Test Practice for Frost & Sullivan. "Finisar has established itself as a leading player due to its ability to offer comprehensive products and integrated solutions."

Despite the recent downturn in the communications industry, Finisar continued to invest in the development of fibre channel test equipment and grew its product line, noted Prakash. He added that Finisar "had a tremendous insight about the market" by developing its Xgig Analyzer System for the burgeoning storage area network (SAN) market, where fibre channel is frequently deployed. With Finisar's recent launch of products in the 4 and 10 Gigabyte range, the Xgig line provides "a complete range of testing products for the fibre channel arena," Prakash said.

"Finisar has established itself as a leading player due to its ability to offer comprehensive products and integrated solutions."

Finisar's Xgig Analyzer System consists of both hardware and software. Targeted at the overall SAN market, Xgig supports both fibre channel and Gigabit Ethernet interfaces as well as emerging SAN protocols such as iSCSI and FCIP. Xgig's hardware is complemented by a software component, Expert, a diagnostic knowledge base that analyzes the Xgig data and flags a variety of errant behaviors, making it easy for enterprise SAN managers to pinpoint problems.

"We designed our products to find the root cause of a problem. Expert helps to troubleshoot the problem once it's found and is analogous to having an in-house fibre channel expert," notes Dr. Brian Staff, Vice President of Marketing for Finisar's Network Tools group.

For higher-level SAN/LAN monitoring, Finisar also offers NetWisdom, a real-time performance monitoring application for both fibre channel SANs and Ethernet LANs. Finisar's LAN tools include the THG (Ten, Hundred, Gigabit) Ethernet analyzer and monitor and the Surveyor protocol and analysis software, which works in conjunction with THG to provide a comprehensive view into the network. A version of the Expert knowledge base is also available for use with THG/Surveyor.

Frost & Sullivan credited Finisar's strong market presence to its vertical product strategy, which encompasses providing test tools for customers all along the SAN market chain, from the research and development labs and manufacturing arms of major SAN vendors such as IBM, Hewlett-Packard, Cisco Systems, and Brocade Communications Systems, to SAN managers in enterprises such as financial institutions, healthcare organizations, and retail establishments.

"If you're an enterprise running a SAN, chances are extremely high that every component in that SAN has been tested by a Finisar device," notes Finisar's Staff. He adds that SAN vendors use Finisar test equipment in the development of their products as well as equip their service and support staffs with the tools. Because R&D labs are part of its customer base, Finisar is often first to market with key capabilities, such as higher speed interfaces, higher port counts, and new protocols, in order to meet the needs of these early adopters, says Staff. Finisar is the first test maker to support 4 and 10 Gigabyte fibre channel interfaces, for example, and offers the highest port count, with 64 interfaces vs. 32 for the nearest competitor, according to Staff.

"If you're an enterprise running a SAN, chances are extremely high that every component in that SAN has been tested by a Finisar device."

Although new test tools and features are initially aimed at developers, Staff says Finisar understands the requirements for enterprise data center and network managers and has developed specific products, such as NetWisdom, geared to these customers. Staff also attributes Finisar's success to its commitment to enhancing and maintaining its products. "We offer investment protection," he notes. "We maintain our products for very long periods, and we're constantly upgrading our software and overall product line. People know we're going to be around."

Although Frost & Sullivan concentrated its focus on the fibre channel market in conferring its leadership award on Finisar, Prakash notes that Finisar offers more broad-based test solutions. He anticipates that this product range, coupled with strategic initiatives, will enable Finisar to increase its share of the SAN and LAN test markets.

Sponsored by

NETWORK TOOLS
Finisar Corporation

For More Information Visit www.finisar.com

NetworkWorld

Without SAN monitoring, downtime is stealing from your business.

Reduce your exposure to the risks associated with SAN downtime. Get NetWisdom and Xgig Analyzer, the SAN monitoring and analysis tools that identify catastrophic events before they shut your network down. SAN failure occurs after an accumulation of invisible errors. Finisar's NetWisdom and Xgig Analyzer proactively identify and troubleshoot network errors, reducing business losses, technology costs, and customer service voids.

Research shows that SAN downtime can cost organizations $100,000 per minute, or more.* NetWisdom and Xgig help you avoid these costs by conducting accurate performance tuning and capacity planning.

When data stops moving, so do the dollars. Be part of the solution: monitor your SAN with Finisar network tools and stop degradation, CRC errors and events that can impact your most critical business data and transactions.

View our web seminar, including a customer case study and demo of NetWisdom by visiting www.**finisar.com**/risk

*Source: Fabric Computing: Beyond the N-tier Data Center, RBC Capital Reports Oct 2003

Finisar

Finisar has been speeding up networks and delivering best-of-breed products and testing solutions since 1988. Finisar was the recipient of the 2004 Frost & Sullivan Award for Market Leadership in the fibre channel test equipment market. NASDAQ: FNSR.

www.finisar.com/risk

Special Focus

TECHNOLOGY: A look at Big Blue's Power5 chip.

IBM ups the ante on Power servers

BY ANN BEDNARZ

IBM has been busy readying the next generation of its high-end Power microprocessor, and while it takes a different design approach than previous generations, the goal is the same: enabling bigger, faster servers that can simultaneously run multiple application environments and operating systems.

Due to make its first appearance in a pair of midrange servers next month, Power5 is the latest addition to IBM's 64-bit microprocessor family. Among the highlights of the chip are new simultaneous multithreading technology and improved server partitioning that analysts say could yield 35% performance gains.

The first Power5-based servers will have up to four processors. Later this year, IBM plans to announce Power5 servers with up to 32 dual-core processors, capable of executing up to 128 threads, or application workloads. That's quadruple the size of IBM's high-end p690 Regatta server. The gains are made possible by providing more cache closer to the processor, which reduces inter-chip traffic, and moving the memory controller onto the Power5 chip, IBM says.

To execute its new high-end processor design, IBM has its new chip-making digs: Last year, the company spent more than $2.5 billion to upgrade its semiconductor manufacturing and development facility in East Fishkill, N.Y.

After the renovation, IBM reorganized on the corporate side. In January, IBM announced plans to fold the technology group, which centers on its semiconductor business, into the systems group — a key consumer of Power chip technology.

With the new chip technology, upgraded facility and new corporate structure, IBM aims to reverse a trend of declining revenue for its semiconductor business. IBM's technology group saw revenue drop 27% over year-earlier figures to $2.9 billion in 2003. In 2002, revenue fell 24% to $3.9 billion. In its annual report, Big Blue attributes the 2003 decline to actions taken in 2002 to refocus its microelectronics business on high-end chips, ASICs and standard products, and sluggish demand from OEM clients.

IBM also has changed its attitude toward chip development. The company is more actively working to open its Power line of microprocessors to third parties and help developers build around its microprocessor core. IBM is encouraging third-party vendors to license its Power design and its semiconductor fabrication techniques.

It has had some success — notably, Motorola and Apple use IBM's Power-family chips. But Big Blue is angling to be more successful at convincing others to use its technology.

Over the past couple of years, IBM has tried to raise the profile of its entire Power family, from its embedded processors and licensed technology up through its PowerPC line and high-end Power processors for servers, says Gordon Haff, senior analyst as Illuminata. "IBM is really trying to expand its licensing ecosystem," he says.

The company has logged some recent successes. Last month IBM announced a deal with Applied Micro Circuits that involves IBM selling three of its PowerPC processors and licensing access to its Power architecture to the network and storage chip company. Another new deal is with Sony, which is licensing IBM's Power technology for use in digital consumer electronics products.

Big Blue's endgame is to use its overall strength as a company to capture 64-bit processor business, where there is not yet a clear and obvious chip provider, Haff says. Other vendors angling for chip share in the 64-bit market include Advanced Micro Devices, Intel and Sun. "Opening up the Power architecture is really about making Power a very common development target, which in turn increases the attractiveness of servers running Power," Haff says.

To make it easier for outsiders to get acquainted with its Power architecture, IBM announced in March new programs aimed at sharing more technical information and facilitating third-party chip design and testing. It launched a portal for Power chip developers, began distributing free software tools to help developers simulate how their systems can work with Power technology and established design centers around the world to help customers develop custom chips.

It's a tactic that distinguishes IBM from rival Intel, which is less likely to relinquish control of its intellectual property, observers say. "Power is a more open architecture than Intel processors are," Haff says. However, he adds that Intel has been more successful in getting its chips into other vendors' systems than IBM has.

Among the first orders of business for the newly conjoined systems and technology division is Power5, which will show up first in IBM's midrange iSeries servers (formerly the AS/400). Power5 processors eventually will be built into other server lines.

Last week the company took the wraps off the first two Power5-equipped i5 models: the one- to two-way i5 Model 520, which starts at about $10,000; and the two- to four-way i5 Model 570, with a base price of $85,000.

One early Power5 user is Group Dekko, which plans to replace a single-processor i820 server it uses as a development environment for new applications with a new Power5-based i5 server. Group Dekko's strategy is to break in the new technology on a development server before making the switch for its production environment, says Chris Edwards, vice president of IS at the Kendallville, Ind., manufacturing conglomerate, which supplies wiring components to the office furniture, appliance and automotive industries.

Performance is the main reason for the upgrade. "With all of the compiling, testing and training that goes on that machine, I'm running into some pretty severe performance requirements," Edwards says. In addition, as the company deploys more memory- and processor-intensive Java applications, performance becomes a greater issue.

Once IBM readies larger i5 servers, Dekko plans to swap its 12-way, i840 production server — which holds the company's ERP applications and Lotus Notes environment — for a higher-end Power5 box, Edwards says.

The Power5 architecture will let Group Dekko reap greater performance with fewer processors, Edwards says. "I'm guessing that a four-way with the Power5 would be bigger than a 12-way," he says. "Based on where I'm at with the IBM S-Star class of processors, I'd say we're going to be able to get two to three times the performance per chip of what we're seeing today."

Some of the performance gains can be attributed to multitasking: The Power5 processors support multithreading, in which one processor acts like two processors so that one chip can run multiple threads of the same application. The purpose of multithreading is to reduce idleness; if multiple workloads run simultaneously, it means less idle time for processor subcomponents.

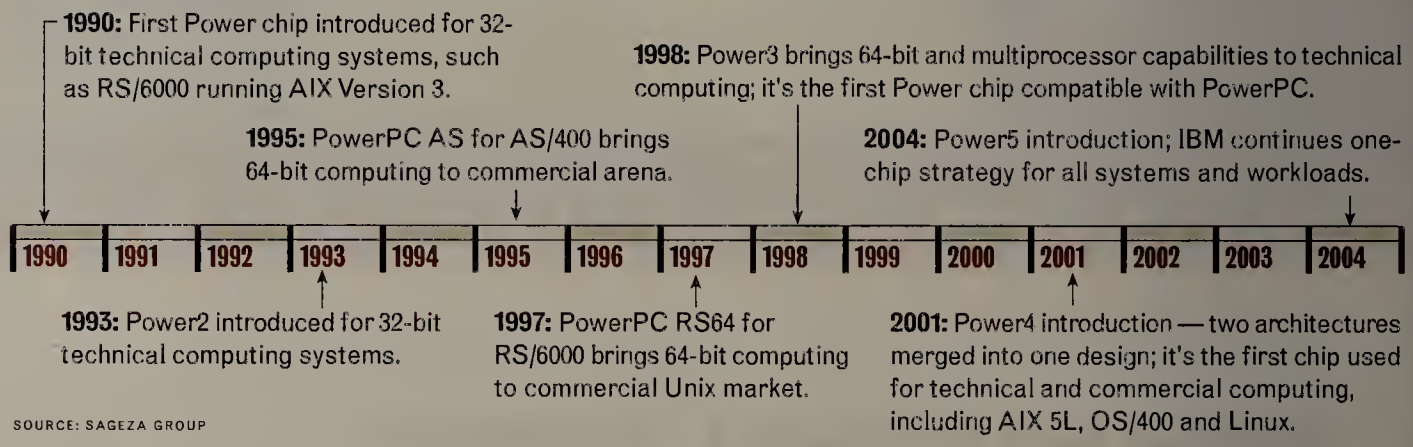
IBM's approach to multithreading differs from Intel's, Haff says. Intel has committed about 5% of its chip area to multithreading features — an implementation that garners about a 10% or 15% performance gain, he says. IBM, on the other hand, is taking up more chip area for its multithreading features, which are more sophisticated and better able to prioritize threads. The result is performance gains in the 35% range, Haff says.

IBM can commit more chip area to multithreading because Power5 deployments are typically servers, which are likely to use the feature, Haff says. Intel has maintained more of a single-threaded approach because of the large percentage of single-thread-oriented desktop deployments for its chips.

IBM's two new i5 models, which are slated for availability next month, are also the first to include the company's new Virtual Engine technology, which lets systems built on IBM's Power5 chip be sliced into as many as 10 partitions per processor. ■

Road to Power5

The evolution of IBM's venerable Power architecture began with its conception in 1965 by IBM Advanced Computing Systems. Here are highlights of the last 14 years of Power development:



SOURCE: SAGEZA GROUP

FINALLY A WAY TO DETECT, ISOLATE, AND ELIMINATE VIRUSES AND WORMS AT THE NETWORK LAYER.

Introducing the industry's first outbreak prevention appliance— only from Trend Micro.

Deadly viruses and worms are now attacking at the transport level. Combat these evolving threats with Trend Micro™ Network VirusWall™— the first and only appliance designed to prevent outbreaks at the network layer. Detect, quarantine, and eliminate threats as they occur. Assisted by our award-winning Enterprise Protection Strategy and security experts, you'll quickly contain viruses and worms and maintain productivity. Mission accomplished.

For details or a free white paper, call 1.888.58.TREND
or go to www.trendmicro.com/products/nvw

PRODUCT OF THE YEAR 2003

PC

Network Computing EDITOR'S CHOICE

DEMOgod

April 22, 2003
Trend Micro
Enterprise Protection Strategy
Trend Micro, Inc.

TREND MICRO™

Enterprise Applications

■ PORTALS ■ MESSAGING/GROUPWARE
■ E-COMMERCE ■ SECURITY
■ MIDDLEWARE ■ DIRECTORIES
■ NETWORK AND SYSTEMS MANAGEMENT
■ WEB SERVICES

Short Takes

■ **Microsoft** has released a plug-in for Lotus Notes to let its **Office Live Meeting 2003** users schedule meetings with IBM's e-mail client. The plug-in works with Notes Versions 5.x and 6.x installed on a PC running Windows 2000 or XP with Service Pack 1, Microsoft says. After installing the software, Notes users will be able to perform Live Meeting tasks, such as scheduling Web conferences, without having to log on to the Live Meeting service. Microsoft entered the Web conferencing market last year when it bought PlaceWare. PlaceWare also offered integration with Notes, but that software add-on does not work with the updated Web conferencing service, Office Live Meeting 2003. Microsoft is not alone in offering Notes integration. IBM competes with Microsoft's Live Meeting through the Lotus Sametime service, and Web conferencing specialist WebEx offers plug-ins for Notes and Microsoft's Outlook. The Live Meeting plug-in for Notes is available for free from http://main.placeware.com/support/plugins.cfm.

■ **Akonix Systems** last week released a version of its instant-messaging management and security gateway designed to block spim and malicious code. Version 3.0 of the company's **L7 Enterprise gateway for IM** includes an automatically updated filter, much like those for spam and anti-virus software, which blocks worms, viruses and other malware to protect networks from IM-borne attacks. The filter installs updates the Akonix security team produces, which monitors public and corporate IM networks for emerging threats and develops policies to block malicious content.

Akonix also has added an automatic recovery system that can restart the gateway without user intervention. Akonix L7 Version 3.0 also includes support for Microsoft's Live Communications Server and Windows Server 2003. Akonix L7 Version 3.0 costs $4,000 for a 50-user license.

Channel woes dog Microsoft

■ BY JORIS EVERS AND STACY COWLEY

Hiccups in Microsoft's efforts to work with its channel partners continue to hurt the software vendor's sales in the business applications market it is trying to crack.

When the company announced its quarterly results recently, CFO John Connors had some harsh words for Microsoft Business Solutions (MBS), the business software group that includes Great Plains, Navision and Microsoft CRM products.

While there were no complaints about sales abroad, MBS in the U.S. is having trouble maintaining its relationship with partners such as the value-added resellers (VARs) on which it depends, according to Connors. "We aren't having very good U.S. execution," he said on a conference call with financial analysts.

MBS CFO Kevin Mueller attributed the problems to "short-term integration issues" merging Microsoft's traditional channel with the Great Plains Software and Navision channels it inherited when it bought those companies. The addition over the past year of new personnel managing the MBS channel also has contributed to problems, he said in an e-mail.

Connors did not hold back in his comments about MBS during the conference call, says Matt Rosoff, an analyst at Directions on Microsoft. "I thought he was unusually harsh. That indicates to me that they have noticed that it is somewhat of a serious problem."

The problems aren't new, but they're persistent. Microsoft in the U.S. is "being less effective with the traditional MBS partners than the MBS group was a year ago," Connors told analysts.

Last October, Connors said first-quarter MBS results showed a slowdown, which he attributed to salesforce and channel realignment issues. At the time he said the company hoped the disruption had peaked and would soon fade.

While all other Microsoft segments reported double-digit revenue growth in the most recent quarter, MBS reported revenue up only 4% over 2003's third quarter, to $153 million. That's a long way from Microsoft CEO Steve Ballmer's forecast of $10 billion in annual sales for the division by 2011.

One Microsoft partner who works with Microsoft CRM — the MBS group's highest-profile product, first released early last year — says chaos descended in January, when

See Channel woes, page 36

AutoProf targets server, desktop mgmt.

■ BY JOHN FONTANA

Desktop management vendor AutoProf this week is scheduled to release software that will let users streamline the centralized management and configuration of servers and desktops.

With Policy Maker Professional, AutoProf is adding 11 Group Policy extensions to Microsoft's Group Policy Management Console snap-in. In the next two months, AutoProf plans to introduce Policy Maker Software Update, which will add 11 more extensions to Policy Maker, including one for patch management.

Group Policy works with Active Directory to let customers manage and customize desktop and server settings based on policies stored in the directory. One Group Policy extension can include hundreds of settings. For example, an administrator can prevent end users from installing software by loading a policy onto the user's PC when the computer boots up and connects to Active Directory. The PC must have Group Policy installed.

But Microsoft's Group Policy technology has been slow to catch on because it requires Active Directory, it can be hard to understand, and it lacks a broad feature set.

"We should be poised to make use of Group Policy, but we found a lot of things missing, like managing shortcuts," says Danny Francisco, lead technologist for Okanagan Skaha School District 67 in Penticton, British Columbia. "On top of that, the Microsoft tools did not give us the flexibility to deal with exceptions." As result, Francisco and his staff had to write multiple scripts to cover those exceptions, which became a management nightmare.

Francisco says AutoProf eliminated the need for the scripts, filled in the pieces he needed, and added additional features, such as managing terminal services.

"AutoProf gives us choices so we can manage things on an enterprise level," says Francisco, who has rolled out Policy Maker to 300 of his 2,000 desktops so far.

Policy Maker builds off the Group Policy Editor from Microsoft, which lets administrators edit and configure policies for groups of users or individual machines. Once the policies are edited, they are loaded into Active Directory.

"Group policy to date has been an immature system," says Eric Voskuil, CTO at AutoProf. "It's a chicken-and-egg problem in that there has not been enough Active Directory deployments and the fact that Microsoft didn't finish Group Policy. They left that up to the ISVs."

AutoProf is the only company currently offering extensions to Group Policy, although FullArmor, NetIQ and Quest offer Group Policy management tools as alternatives to the Microsoft Group Policy management software AutoProf supports.

Policy Maker supports Windows 2000, XP and Server 2003 operating systems and all versions of Outlook, Office and Internet Explorer.

The software costs $10 per seat for 1,000 seats. ■

Extending the view

AutoProf is adding extensions to Microsoft's Group Policy technology to help manage desktop and server configurations using centrally defined policies. The 11 new extensions are:

- TCP/IP and shared printer connections.
- Network drive mappings.
- Shortcut configurations.
- Registry and ini file configurations.
- File and Folder configurations.
- Environment variables.
- Microsoft Outlook profiles.
- Microsoft Office, Internet Explorer and third-party application preferences.
- Integration with Microsoft's Group Policy Object Editor.
- Integration with Microsoft's Resultant Set of Policy.

'NET INSIDER
Scott Bradner

Lessons from the e-voting mess

April 30 was not a good day for vendors of electronic voting systems. Nor was May 3.

There might be quite a few such bad days ahead for companies that sell gussied-up PCs intended to replace older voting systems such as the punched card systems we had so much fun with during the 2000 presidential election.

On April 30, California Secretary of State Kevin Shelley decertified all electronic voting systems for use in California elections unless a long list of specific conditions were met. Three days later the government of Ireland decided not to use the electronic voting systems it had paid about $60 million for because it could not ensure they would work. There might be lessons that extend far outside of the electronic voting space in these developments. Many problems have been identified with these systems, and just about as many have been identified with the system vendors and the election officials that select them (see www.nwfusion.com, DocFinder: 1929).

The most basic problems with the electronic voting systems are that they use, as their core, PCs running Windows and treat their own software as proprietary and secret. It is not impossible to create trusted systems using Windows as a base, but it takes extraordinary care, something that can be taken care of in public reviews of the processes that vendors and election officials use. Processes of the type that led the California secretary of state to refer one vendor to the California attorney general for possible criminal or civil prosecution.

It also is possible to create secure proprietary software, but to do so requires vendors employ and listen to security experts and get external experts to review the code. An external review of one of the electronic voting systems — not at the vendor's request or desire — revealed the code was appallingly poorly programmed. To quote one reviewer: "It's not as though they did security poorly. It's as though they didn't think about it at all."

I'm not sure if I'm more troubled that the security clue-challenged company was selling this software, or that at least some of the software was certified for use by government agencies.

Many systems have reliability and security requirements similar to voting machines, including ATMs. The report that Shelley published can be used as a good list of prerequisites to deploy any system of this type (see DocFinder: 1930). The report stresses the importance of software review, system and process documentation, system isolation and training.

Quite a few observers have said the basic lesson from the voting system debacle is that all software for this type of critical system should be open source. I don't think that is an unwarranted conclusion, but maybe the lesson is deeper. Just maybe, general-purpose operating systems are not the best solution to all problems. Maybe stripped-down specialized code is better in some cases.

Disclaimer: "Stripped down" is not a concept often associated with Harvard even if "specialized" might be. In any case, the university was not involved in writing the above column.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sob.com.

Complete solutions.

Best security.

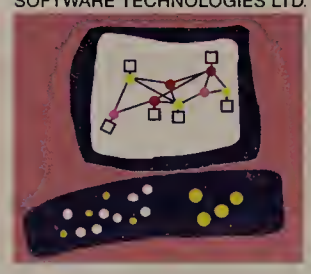
Highly reliable.

Cost effective.

"Check Point Express brings enterprise-class security to the mid-sized company at a price and performance level that meets their needs."

Charles Kolodgy, Research Director,
Security Products, IDC

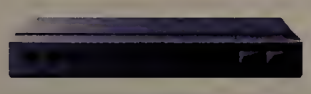
Check Point™
SOFTWARE TECHNOLOGIES LTD.



We Secure the Internet.

Secure your business with Check Point Express.

Your business deserves the best security solution available today: Check Point Express™. Designed for companies with 100-500 employees, Check Point Express protects your business with the same superior firewall and VPN technology that secures 97 of the Fortune 100. Yet it's priced right for mid-size businesses. With Check Point Express, you'll get performance you can always rely on, and security you don't have to worry about. Its unique features include intelligent network and application-level protection. And its intuitive interface simplifies every aspect of security management. There is no better way to secure your critical network resources and connect remote users and sites. See for yourself. Compare Check Point Express to competing offerings at **www.checkpoint.com/compareexpress**.



Check Point Express comes pre-installed on appliances from Sun and Nokia and runs on open servers from Dell, IBM, and other leading manufacturers.

Managed Objects helps track services

BY DENISE DUBIE

Managed Objects this week is expected to unveil software that will let customers track internal service-level agreement compliance based on network, system and application performance data.

Business Service Level Manager 2.0 is add-on software to Managed Objects' flagship management package, Formula. The software extracts data from Formula, correlates it and compares it to SLAs IT managers have pre-defined. Formula also can gather system data from other management systems such as BMC Software's Patrol, Computer Associates Unicenter and HP OpenView. The software also can pull data from inventory, billing and transaction-based systems to integrate business metrics with IT performance data.

Ritch Houdek, IT manager at a privately held Midwestern financial services firm, says BSLM 2.0 lets him set more-specific SLAs based on metrics such as application priorities and end-user needs. He is beta-testing BSLM 2.0 and also uses Patrol, OpenView and Panacya Service Center to track application performance.

"We typically use three broad buckets for application service levels. We can better classify applications with [BSLM] than with the crude approach we have now," Houdek says.

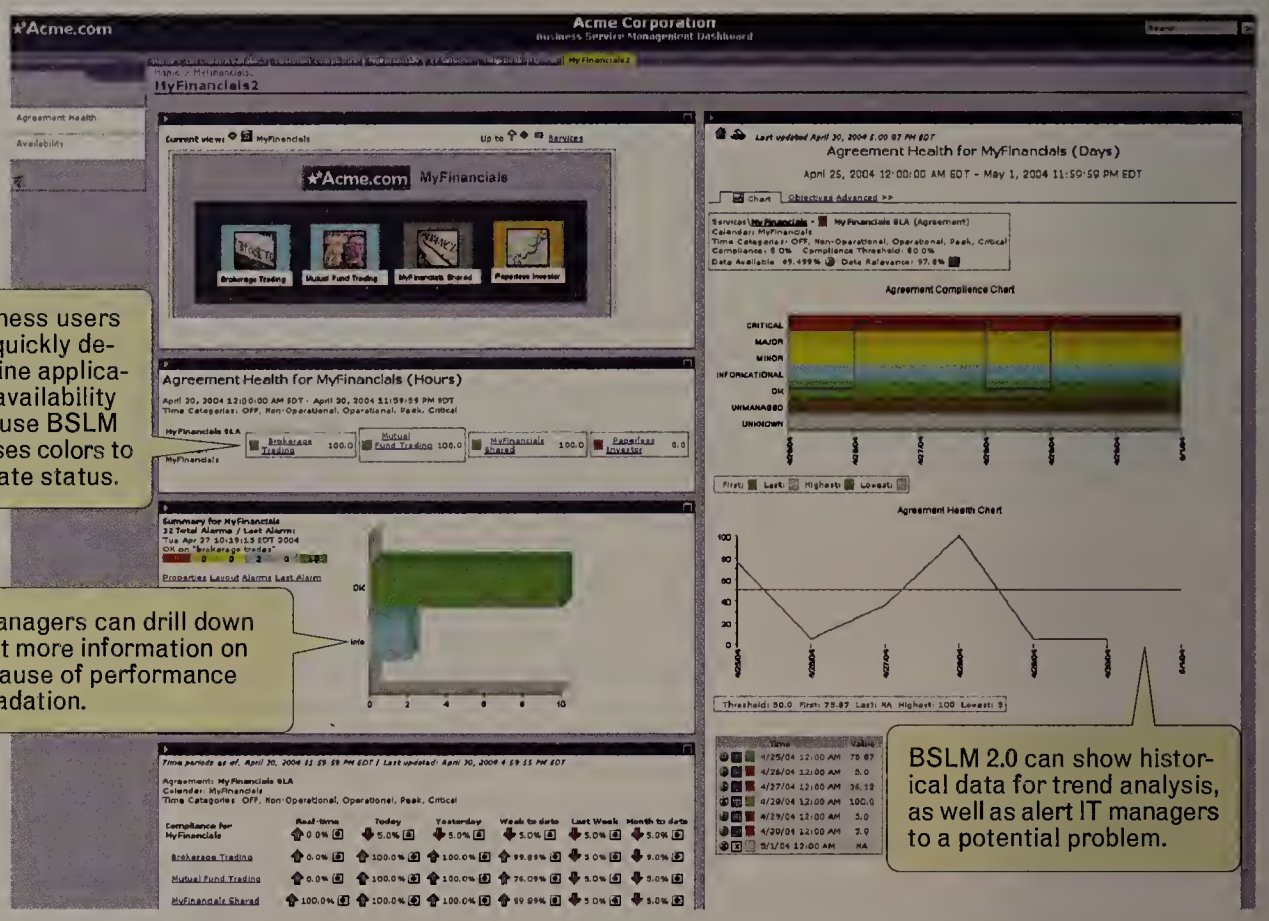
BSLM 2.0 runs on a Windows 2000 or XP, Solaris, Linux, HP-UX or AIX server and works as an add-on to Formula. Formula consists of server software that runs on Windows NT, Linux and Unix, and provides reports via a Web-based console.

BSLM competes with products from Concord, Micromuse and SMARTs, which all develop similar software.

Pricing starts at $60,000 for existing Formula customers. Pricing for new customers for Formula and BSLM 2.0 starts at about $200,000 and varies depending on the number of software adapters purchased. ■

SLA surveillance

Managed Objects' Business Service Level Manager 2.0 software lets users define and manage service-level agreements in terms that IT and business managers understand.



Channel woes

continued from page 33

Microsoft shook up the channel by moving Microsoft CRM into its volume-licensing program and cutting the margin paid to partners for upfront sales.

For Ben Holtz, CEO of Green Beacon Solutions, a Watertown, Mass., CRM services firm, the change meant that he could no longer buy his clients' CRM licenses directly from Microsoft. Instead, he now works via a reseller, an arrangement that's been fraught with complications and delays.

"We're not a high-volume dealer. We are having a terrible time getting customers situated properly with the software," he says. "We had a very rough time signing up with the distributor. We haven't gotten any of our referral bonus cuts that we're supposed to get. It used to be so easy. I'd get online, order something, they'd ship it, and I got it and got my commissions."

Microsoft's rationale for the change is that volume licensing is easier for end users, who can buy from their preferred reseller. But Microsoft CRM is aimed at small and midsized companies, organizations that typically don't buy in bulk and don't have a deep relationship with Microsoft, Holtz says. For those customers, and for the small consultancies that support them, the changes have added obstacles and bureaucracy to the buying process.

Microsoft's MBS missteps come as it is trying to gain share in the crowded and highly coveted market for business applications aimed at midsize companies. Microsoft faces stiff competition from large vendors moving into the small and midsize business market, such as SAP and PeopleSoft, and from smaller vendors already there, including Salesforce.com, NetSuite and Intuit.

"We're just not doing a lot better than the competition the way we expected. We're kind of doing what the competition is doing," Connors said. He expects U.S. operations to begin meeting Microsoft's expectations sometime in the company's 2005 fiscal year, which starts July 1.

"We're just not doing a lot better than the competition the way we expected. We're kind of doing what the competition is doing."

John Connors
CFO, Microsoft

Not all of Microsoft's problems are of its own making.

"It has been a lousy several months for selling accounting and CRM software," says Rafael Zimberoff, president of Z-Firm, a Santa Rosa, Calif., firm that makes add-ons for MBS products, including Microsoft CRM. "All the players are basically treading water."

Microsoft's channel plan needs some adjusting to accommodate for the differences between the business software market and the platform market with which Microsoft is more familiar, Zimberoff says. Software to handle sales, accounting, marketing and customer service tasks is more complex to install, customize and service than the operating system and desktop software that forms Microsoft's core business. A channel strategy built for the platform market doesn't necessarily fit the needs of business software partners and buyers.

"Customers are buying two fundamentally different things," Zimberoff says. "A business software customer has a number of competitive options and often has a long-standing relationship with their reseller. A platform buyer has a different relationship with Microsoft and the reseller, which in many cases is more shallow. What kind of relationship do you need to have to get a PC with Office installed on it?"

Channel issues aren't Microsoft's only hurdle. Its vagueness about MBS product plans might be crimping sales. The vendor has talked publicly about Project Green, an initiative to replace Great Plains, Navision and Microsoft CRM products with applications built on a single code base that depends on Microsoft's Longhorn client, server and tools products, which is expected to start shipping in 2006.

"The elephant in the house is Project Green," says Directions on Microsoft's Rosoff. "It seems like something that could hurt MBS sales. Customers know there is going to be this big technology transition, and Microsoft has not given them any assurance about backward compatibility."

Microsoft's reluctance to discuss a CRM road map also frustrates some: It took the company nearly a year to put out Microsoft CRM 1.2, an update generally regarded as a bug-fix release, and the company has not committed to a date for a 2.0 version. That release, not expected before mid-2005, is likely to incorporate expanded customer service and mobile features that will make Microsoft CRM more competitive with its rivals' products.

Despite their gripes, some partners say they're with Microsoft for the long haul.

The disruptions Holtz has faced haven't stopped him from enthusiastically backing Microsoft CRM, he says. Lance Kyle, managing director of Seattle CRM services firm Acetta, says the changes Microsoft made as it moved to volume licensing for CRM cut his firm's margins on the product, but not significantly enough to worry him. He says he considers Acetta's dealings with Microsoft fairly smooth.

Evers and Cowley are correspondents with the IDG News Service's San Francisco bureau.

THE IDEAL I.T. INFRASTRUCTURE: QUICKLY ADAPTABLE, SUPREMELY FLEXIBLE, NOW ACHIEVABLE.

Feeling a bit skeptical these days? It's perfectly understandable. After all, integrating those "best of breed" applications into your IT infrastructure turned out to be not nearly as fast or foolproof as advertised. And capturing their full value, as well as the full value of your entire infrastructure, probably still seems like a distant goal.

Given the circumstances, you did everything you could. After all, you were handed the technological equivalent of a drawerful of mismatched socks – very expensive socks.

But now you can do more – actually, quite a lot more. Read on and find out how.

THE ACCELERATION OF EVOLUTION

Remember when it was okay for businesses to evolve slowly?

Of course you don't. Success has always been about speed: the speed of innovation, the speed of implementation. And it all just keeps getting faster.

Today, markets, customers and competitors change seemingly overnight. And so must your business processes and strategies.

Unfortunately, this rapid pace of change has exposed a fundamental weakness at many businesses: an IT infrastructure that can't evolve quickly enough to take advantage of opportunities or respond to challenges.

There are two reasons for the bottleneck. The first is complexity. By the time a new business process or strategy can be designed,

built, implemented and executed technologically, the window of opportunity has usually closed.

The second is monetary. Currently, 80% of the average IT budget is earmarked for operation and consolidation. Very little is left for innovation. *(Source: SoundView Technology Group, 2003.)*

Can your business afford to concede opportunities to more agile competitors? Of course not.

Your task is clear: to enable your company to compete and win, you have to reduce the complexity and cost of your IT infrastructure, and reallocate more of your resources toward innovation.

Fortunately, there's a technology platform that will enable you to fulfill that task. It's called SAP NetWeaver.™

But before we take a closer look at what makes SAP NetWeaver so useful, let's explore what contributes to a high, and skewed, overall TCO.

THE COMPLETE TCO EQUATION

The typical IT infrastructure is a jumble of disparate technologies (including portals, business intelligence, knowledge management, etc.) and applications (both legacy and best of breed).

Whether you're integrating your applications into a portal or a business intelligence solution, or connecting your apps with the integration broker, it's costing you time, money, and unnecessary aggravation.

To help illustrate just how much money, we're introducing a new, more complete way of identifying costs. It's called The Complete TCO Equation.

COMPLETE TCO =

the cost of all your technologie
+ the cost of all your applicatio
+ the cost of integrating all you

From this point of view, it's no surprise that integration has been likened to a sinkhole, draining money from innovation and preventing your business processes and strategies from evolving as quickly as they need to.

But what if you could transform integration into a far simpler, less expensive, less painful process – no matter whose technology or applications you're integrating? Now you can – with SAP NetWeaver.

SAP NETWEAVER: ELIMINATING HURDLES, ENABLING IDEAS

Imagine being able to quickly and efficiently align IT with your business's needs, to drive new strategies for growth while minimizing risk and cost, to compose new business processes on top of existing systems.

s, including their integration into a single platform
ns, including their integration into an end-to-end process
r technologies with all your applications

It's all possible with SAP NetWeaver.

SAP NetWeaver is an open, standards-based integration and application platform that greatly reduces the complexities of integration. Its components include a portal, an application server, business intelligence, and integration and data consolidation technologies.

With SAP NetWeaver, you capture the full value of the technology you already have in place, and pave the way for future technology – SAP or non-SAP.

The result: an opportunity to achieve significantly greater flexibility at a far lower, sustainable TCO.

Bottlenecks disappear. Timetables are met. Business goals are achieved. Your entire IT architecture is elevated from an enabler of work into an enabler of change.

For current SAP customers, there's even more of an advantage: SAP NetWeaver comes pre-integrated for SAP® solutions, which greatly reduces the costs associated with systems integration.

But SAP customer or not, there's one thing that should be clear: of all the software providers in business today, SAP is uniquely positioned to deliver integrated technologies and technologies integrated with applications.

If that concept piques your interest, we suggest you visit **sap.com/netweaver** where, we hope, your curiosity will be integrated with our solutions.

WONDERING WHAT SAP NETWEAVER CAN DO FOR YOU? SEE WHAT IT DID FOR THEM.

CHECK POINT SOFTWARE TECHNOLOGIES LTD. REDUCES TCO AND COMPLEXITY OF IT INFRASTRUCTURE.

The success of Check Point Software Technologies Ltd., the world's leading developer of firewall software, was founded on innovative Web service applications, which it used to support a global, third-party channel that delivered one hundred percent of the company's sales.

But success had a price: its central IT department was spending too much time maintaining the large number of applications. What's more, their IT infrastructure was a dizzying mix of different application servers, development tools, and open source components.

Using SAP NetWeaver – and, more specifically, SAP Enterprise Portal and SAP Web Application Server – Check Point was able to immediately consolidate its Web services infrastructure, doubling central IT's application development productivity. Within a year and a half, Check Point saw an ROI of 586% based on IT productivity increases and swifter rollouts. The consolidation also allowed Check Point to reduce the number of servers running their Web service applications from 11 to 3. Over five years, Check Point expects a 23% reduction in TCO.

CARL ZEISS OPTICALLY EVOLVING BUSINESS PROCESSES TO MEET THE NEEDS OF A CHANGING MARKET.

Carl Zeiss, a leading optical component manufacturer with 14,000 employees, needed to find a way to evolve more quickly. Consolidation among optical chains was creating new, ever-larger customers, resulting in management scenarios of greater complexity and delays in order processing.

Using SAP NetWeaver, Carl Zeiss was able to integrate multiple systems around the needs of their customers, developing individual logistics strategies for each chain. As a result, custom orders and changes are now accommodated more easily. And the time it takes to integrate a new customer into the system has dramatically decreased.

Besides gaining more-satisfied customers, Carl Zeiss reduced the average cost per integration interface by 50%.

SASOL, FURTHER LEVERAGING THEIR SAP INVESTMENT.

Sasol, a holding company for nearly fifty separate chemical and fuel businesses around the world, had consolidated all of its core operational software around SAP. However, it still faced the challenge of properly managing a widely dispersed, and culturally diverse, workforce.

Using SAP NetWeaver, Sasol was able to create an enterprise-wide information portal for collaboration and communications between employees of different divisions, greatly increasing the company's ability to meet strategic corporate goals. The portal also served to coordinate business processes for HR, production planning, and production work flow across Sasol's various business units.

The financial results were impressive, with an ROI over five years, after tax, of 453%. But even more importantly, thanks to SAP NetWeaver, Sasol was able to become a truly global player.

WANT TO KNOW MORE?
VISIT sap.com/netweaver

THE BEST-RUN BUSINESSES RUN SAP

ServiceProviders

■ THE INTERNET ■ EXTRANETS ■ INTEREXCHANGES AND LOCAL CARRIERS
■ WIRELESS ■ REGULATORY AFFAIRS ■ CARRIER INFRASTRUCTURE DEVELOPMENTS

MCI by the numbers

SEC filings reveal the carrier's post-bankruptcy financial status.

■ BY DENISE PAPPALARDO

Revenue is dropping, spending on new technologies is shrinking and a net loss for the year is likely. A downer of a coming-out party for MCI, huh?

Newly public Securities and Exchange Commission (SEC) filings from the carrier give the clearest picture of the company's financial health in months. MCI had been able to keep much of its financials private while under Chapter 11 bankruptcy protection, which it emerged from last month.

In documents filed with the SEC, MCI reported a 19.1% drop in business services revenue in 2003 to $14.1 billion (www.nwfusion.com, DocFinder: 1946). MCI's overall revenue fell 14.7% over that period from $28.6 billion to $24.4 billion (these figures do not include MCI's Brazilian division Embratel, which MCI is selling).

Throughout its bankruptcy proceedings, MCI was required to provide monthly financial reports that only included overall net income and revenue figures. It was nearly impossible to figure out how much the carrier was spending internally or how much revenue was coming from its consumer, international or business divisions.

On top of releasing more-detailed financial results, the carrier reduced its financial guidance for 2004. MCI originally said it would bring in $21 billion to $22 billion in revenue for the year, but now says it will come in at the lower end of that estimate.

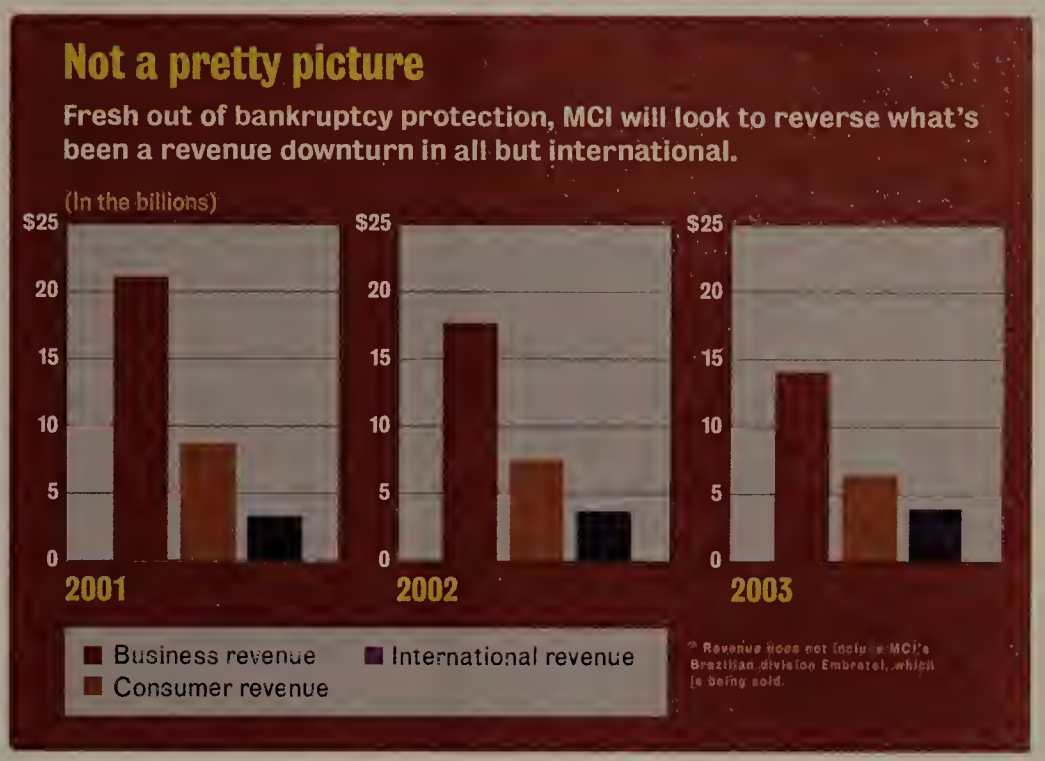
Spending plans

The carrier has stated that its capital expenditures for 2004 will be $1.05 billion, which translates into 5% of its revenue. "That's extremely low," says Kevin Mitchell, a directing analyst at Infonetics Research. Carriers in North America — including incumbent local exchange carriers, interexchange carriers and cable companies — average close to 14%, with IXCs hovering around 10%, he says.

MCI's numbers actually will be up from 2003, when the company spent about $732 million, or roughly 3% of its revenue, Mitchell says.

In contrast, AT&T says it likely will spend about $7 billion this year.

See MCI, page 40



Short Takes

■ **Ciena** last week completed the acquisitions of **Catena Networks** and **Internet Photonics,** two companies that add broadband access and metropolitan services product lines to Ciena's optical portfolio. Ciena says it was spending $636 million to acquire the companies. Effective immediately, Catena becomes Ciena's Broadband Access Group, led by former Catena CEO Jim Hjartarson. Internet Photonics becomes part of Ciena's Metro and Enterprise Services Group, led by James Frodsham.

■ **The Multiservice Switching Forum** last week announced that **Advanced Fibre Communications, Cable & Wireless, Ericsson** and **Nortel** have joined its ranks. The forum is an association of service providers and system suppliers looking to develop and promote open-architecture multiservice switching systems incorporating frame, cell or packet-based technologies designed to support voice, video, private line and data. The group formed in 1998 and has 32 members.

New gear to deliver Ethernet access

Adva offerings designed to make Ethernet services more accessible to campus networks.

■ BY JIM DUFFY

Adva Optical Networking this week will unveil a product that could result in Ethernet access services becoming more readily available to business customers seeking more bandwidth at campus networks.

The company's FSP 150 Ethernet circuit provisioning and aggregation system adheres to the IEEE 802.3ah standard for Ethernet in the First Mile (EFM) LAN extension from enterprise networks into carrier metropolitan networks.

Adva says its system, which consists of a customer premises-based demarcation unit and two aggregation devices that sit in the service provider's access infrastructure, provides carriers with an alternative to traditional methods for provisioning managed Ethernet services. Such methods include the combination of routers with metropolitan dense wavelength division multiplexing transport platforms over dark fiber; SONET leased lines with proprietary mapping techniques; and Layer 2 enterprise-class switches.

Adva says these older techniques lack 10G bit/sec support for high-speed data center connectivity or are inefficient and expensive for mass Ethernet rollout.

EFM-based systems, on the other hand, support native Ethernet access to a Layer 2/Layer 3 switch router infrastructure in the carrier network, and operations, administration and management principles familiar to the service provider, Adva says.

EFM, however, was dealt a blow last year when three RBOCs issued the Fiber-to-the-Premises (FTTP) RFP. Analysts say FTTP favors the Full Service Access Network standards and broadband passive optical networking equipment over EFM standards and Ethernet PON gear (www.nwfusion.com, DocFinder: 1947).

Still, the market for Ethernet access services is big and expected to get huge. The worldwide market is expected to triple from $10 billion last year to more than $30 billion in 2007, Adva says, citing data from IDC.

Adva's demarcation unit — the FSP 150CP — features three management ports, two Ethernet access ports that support 10/100M bit/sec and Gigabit Ethernet, and two fiber network connection ports. The carrier network components — FSP 150ME and FSP 150MO — support 10 electrical and 10 optical Ethernet aggregation interfaces, respectively. The overall system can be configured in point-to-point, tree or ring topologies for provisioning of managed E-Line (Ethernet point-to-point private line) or E-LAN multipoint services, Adva says. It supports 50 millisec protection switching and a proprietary restoration technique to recover from faults, the company adds.

The base price of the FSP 150 will be about $1,000. It will be available in June.

Accelerating and Securing Web-Delivered Applications

NetScaler brings performance, security and reliability to Web-delivered applications with a single, integrated solution.

As companies continue to turn to the Web to deliver business-critical applications, they learn more and more about its limitations. Applications can perform poorly, especially under heavy load or when accessed via low-quality connections. Providing proper security is a seemingly never-ending battle, whether the goal is to protect personnel records and customer transaction data or simply to maintain application availability in the face of a denial-of-service (DoS) attack. You've also got to ensure you provide appropriate virtual private network (VPN) access to critical applications for an ever broader range of employees, partners and end customers — without breaking the bank.

Any one of these issues could threaten the overall return on investment (ROI) on your Web application infrastructure, whether it's used for internal applications, an extranet that ties in business partners or a public Web site. Taken together, the various threats represent a potentially devastating risk to your ability to achieve business goals.

You do have options for addressing these issues—perhaps too many options. Indeed, many separate appliances each purport to address a portion of the problem, including load balancers, Layer 7 or "application switches," compression appliances, Web caches, Secure Sockets Layer (SSL) accelerators, DoS protection systems and VPN gateways. The problem is, cobbling together numerous point products increases complexity and interoperability risks, while raising capital and operating expenses.

"We've spoken with many people at enterprises that operate internal or external applications," says Peter Sevcik, president of NetForecast, a consulting firm that specializes in analyzing and improving application performance. "The issues they're facing today are consistent: How do I roll out a growing portfolio of Web-based applications while controlling performance, hitting cost targets, and maintaining data center security?"

Focused on application delivery

NetScaler, based in San Jose, Calif., has a solution for the problems Sevcik describes. The company developed its 9000 Series of application delivery systems to be the next generation of traffic management devices. The devices specifically address the problems associated with securely delivering complex enterprise and e-commerce applications over an often unpredictable Internet. Whether the application involves enterprise employees accessing a customer relationship management program or an online buyer booking the latest concert ticket, NetScaler's 9000 Series can be a critical success factor in ensuring applications meet performance and security goals.

"The issues they're facing today are consistent: How do I roll out Web-based applications while controlling performance, hitting cost targets, and maintaining data center security?"

Peter Sevcik, *NetForecast*

Hundreds of leading companies already depend on the NetScaler 9000 Series, including ShopNBC, an upscale TV and Internet retailer. ShopNBC significantly boosted performance for its dial-up users and delayed hardware upgrades for at least 18 months. Another major retailer, Pacific Sunwear, which has some 880 brick and mortar stores and a growing Web presence, is using NetScaler's suite of integrated technologies to improve performance and avoid thousands of dollars in bandwidth upgrades (see stories, this and facing page).

Achieving stellar performance

NetScaler enterprise customers report reductions in response time of 50% or more for applications ranging from Web-based e-mail to CRM, human resources and

Case Study #1

ShopNBC

Vertical industry: E-commerce

Problem: Providing good performance for a customer base dominated by dial-up users.

Solution: NetScaler 9800 Secure Application Switch to compress SSL and non-SSL traffic.

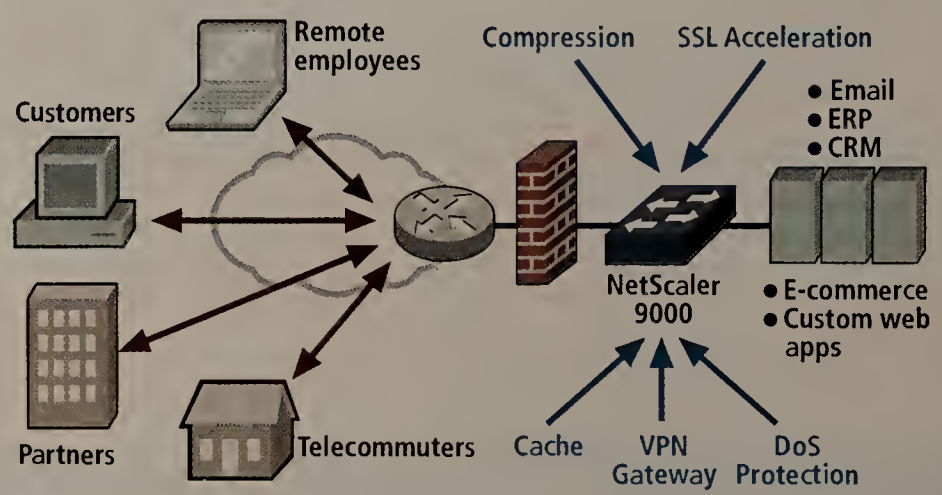
Result: 33% improvement in homepage download time over dial-up lines, from 24-25 seconds to 15-16 seconds. Average page download time reduced one-third to one-half. *Improved shopping experience leads to more revenue.*

Cost savings: Postponed purchase of new servers for 18 months; approximately $26,000 per year in reduced SSL and Web log analyzer licensing fees; lower administration costs.

ShopNBC, an upscale TV and Internet retailer, sells products affiliated with the NBC television network as well as an array of general merchandise, from computers and jewelry to health and fitness. The compression and SSL acceleration capabilities in the NetScaler 9800 gave ShopNBC an immediate, noticeable performance boost. "NetScaler's products surpassed the alternatives in delivering the performance that our customers demand," says Steve Craig, vice president and CTO at ShopNBC. Even with the Summer Olympics coming up, Craig is confident he won't have to buy more servers to keep up with demand.

NetScaler puts it all together

NetScaler application delivery systems combine numerous functions traditionally provided by separate appliances, enabling you to cost-effectively boost the performance, availability and security of your applications.



financial applications (see chart, this page). That translates into less time waiting for pages to load and, ultimately, increased employee productivity.

The results are similar for e-commerce and public content sites. Using the 9000 Series' integrated compression and TCP processing capabilities, ShopNBC was able to reduce download times for its home-page by 33% and all other pages by one-third to one-half, says Steve Craig, vice president and CTO at ShopNBC.

"Before deploying NetScaler systems, we were faced with the challenge of delivering complex applications to a broad base of users, many of whom are still on dial-up," Craig says. "NetScaler enabled us to improve performance while minimizing server and overall data center investments."

Not just faster, but more secure

At the same time that NetScaler 9000 devices improve performance for end users, they also increase application security as a whole. NetScaler offers a range of attack protection capabilities, including application-level intrusion filtering to block worms and viruses such as Code Red and NIMDA. The devices also defend against various types of DoS attacks, such as SYN floods and the recent MyDoom set of attacks.

"NetScaler enabled us to improve performance while minimizing server and overall data center investments."

Steve Craig, *ShopNBC*

"NetScaler is used as a primary or secondary firewall by several customers," Sevcik says. After conversations with several NetScaler enterprise and public Web site customers, he says, "It became clear that they had a need for packet filtering and attack protection, and appreciated the fact that it was solved as part of an integrated device."

The security provided by NetScaler extends to remote users who access the network via VPNs. The NetScaler 9000 family supports SSL-based VPNs, which enable remote users of all types to securely access applications using only a Web browser. SSL VPNs can be configured to provide granular access to specific applications and directories — thus protecting the rest of your enterprise network — without the expense and ongoing complexity of managing dedicated client software.

Tallying cost savings

While NetScaler uses all of these techniques to thwart illegitimate traffic, it also ensures that all legitimate requests get through, improving overall availability. Rather than drop connections, as an overwhelmed Web server might during peak periods, NetScaler queues them up for efficient handling. Visitors never see the dreaded "server not available" message.

That was an important consideration for ShopNBC because the site is subject to unpredictable traffic spikes, Craig says. NetScaler enables Craig to take such spikes in stride, rather than adding horsepower that will go unused except at peak times. Indeed, he figures he won't need to add servers for about 18 months, while other NetScaler customers report reductions of 75% to 80% in the number of servers they require. Several NetScaler customers report savings of more than $1 million by eliminating the need to purchase additional servers to handle increasing loads.

You can also expect large savings from reduced bandwidth requirements. In many instances, the compression feature alone will save customers $20,000 per month in bandwidth costs, enabling the device to pay for itself in a matter of months.

While these are all hard cost savings, the improved performance, availability and security provided by the NetScaler 9000 also bring considerable "soft" cost benefits. Consider the savings in productivity when screens from important internal Web-based applications paint 50% more quickly.

Consider, too, the IT productivity savings from having a single device provide functions once performed by many discrete appliances. When that same device is able to defend against security threats, including DoS and worm attacks that threaten availability, you can see how quickly the ROI adds up.

Most any company that's relying on the Web to deliver critical applications could benefit from the type of performance, availability and security boost that NetScaler provides, Sevcik says. "Any company that's doing supply chain management, reaching out to business partners or using some customer relationship software to address many users outside their own company — all of those could benefit."

Real customers, impressive results

NetScaler delivers significant Web application response time improvement.

Application	Response Time Improvement (%)
PeopleSoft	62%
Outlook Web Access	58%
Lotus iNotes	55%
e-Commerce (ShopNBC custom)	33%
Custom portal (online job search)	60%

SOURCE: NetScaler customers

Case Study #2

Pacific Sunwear

Vertical industry: Retail

Problem: Frequently dropped transactions during checkout.

Solution: NetScaler 9800 Secure Application Switch to compress data and a new network design that incorporated load balancing between two Internet T3 access links.

Result: A 50% reduction in bandwidth utilization and *"a significantly improved customer experience, ultimately leading to an increase in sales."*

Cost savings: Avoided $30,000 investment in dedicated load balancer and "many thousands of dollars" in bandwidth upgrades and additional capital equipment. ROI achieved in two months.

Pacific Sunwear operates some 880 brick and mortar stores, selling more than 30 popular surf and skate brands including Billabong, Dickies, Quicksilver and Fossil.

Although Pacific Sunwear is connected to the Internet by two 10M bps circuits, customers were experiencing dropped transactions in the middle of the electronic checkout line during high volume periods. The company's IS department addressed this problem by installing NetScaler's 9800 Secure Application Switch. The NetScaler system's compression capability immediately reduced bandwidth requirements by 50%, with no need for customers to download any special software. After the NetScaler 9000 Series systems were deployed, the congestion that was at the root of the checkout problem was gone.

"There's no downside whatsoever to the NetScaler installation – it's been a win-win situation across the board," says Dwayne Russell, director of technical services for Pacific Sunwear. "Our customers are extremely happy because they have fast, reliable connections to the site. IT management is happy because we are maximizing the utilization of our existing network resources, and our e-commerce call center team is ecstatic because the dropped transactions have stopped entirely. Marketing and merchandising are delighted because we've seen marked improvements in sales. And our finance team is pleased because we improved our site's performance at half the projected cost."

EYE ON THE CARRIERS

Johna Till Johnson

Telecom boards: Wake up!

It's not news that many telcos were grossly mismanaged during the last decade. Unfortunately, it seems that many telecom corporate boards still don't get it when it comes to running companies in this millennium.

Sanity check: Research firm Glass Lewis recently conducted a review of CEO paychecks at 444 public companies. They divided CEOs into "underpaid" and "overpaid" by assessing both CEO compensation and company performance relative to peers. "Underpaid" CEOs made less than the average for their peer groups while their companies performed better than average. (Compensation included not just paychecks but bonuses, additional compensation and recently granted stock options.)

"Overpaid" CEOs were the opposite. They made more than average while their companies' performance was below average. Performance was rated based on six common financial assessments, and corporate "peer groups" were based on a mix of companies of similar value, similar size in the same industry and companies in the same segment of an industry.

In some respects, the "underpaid" and "overpaid" classifications are rough proxies for how well managed a firm is. It's simply not good business practices to overpay employees — even the CEO. A corporate board that lets cronyism, executive greed, or out-and-out lethargy override sound business practices in one area is highly unlikely to be a shining example of disciplined business practices in other areas.

You can guess where I'm going with this. Not one telecom CEO made it into the "underpaid" CEO ranks. But the CEOs of Sprint, Verizon, Qwest and SBC all showed up in the ranks of the overpaid. By Glass Lewis' figures, all four companies underperformed in 2003 — while reportedly paying their leaders record rates. Qwest's Richard Notebaert made $9.6 million last year, with Verizon's Ivan Siedenberg coming in at $15.5 million and both SBC's Edward Whitacre Jr. and Sprint's Gary Forsee bringing home between $25 million and $26 million. Qwest and Verizon performed in the lowest quartile of their peer groups, while the other two performed in the lower half.

Not one telecom CEO made it into the 'underpaid' CEO ranks. But the CEOs of Sprint, Verizon, Qwest and SBC all showed up in the ranks of the overpaid.

Don't get me wrong, I have nothing against lavish executive pay — particularly for CEOs who deliver. I don't even fault CEOs for negotiating the highest possible compensation for themselves. But a corporate board's job is to provide executive oversight, and a board that rewards mediocre performance with record compensation is asleep at the switch.

Not every telecom board is so sloppy. I was delighted to see that the boards of leading telcos and equipment providers such as Avaya, AT&T, Cisco and Lucent appear to believe in performance-based pay. Hats off to Nortel's board, which recently took the difficult and painful — but necessary — step of firing the firm's CEO for financial irregularities that occurred on his watch. Finally, MCI retained overseer Richard Breeden to closely manage the carrier as it emerges from bankruptcy — including keeping a lid on CEO Michael Capellas' compensation requests. Way to go, guys. Let's hope the rest of the telecom industry learns from your example.

Johnson is president and chief research officer at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

Vanguard tackles VoIP, apps performance mgmt.

■ BY TIM GREENE

Vanguard Managed Services says it now can install, monitor and manage IP telephony networks for businesses, freeing up staff time to perform more critical functions.

The company's new VanguardMS' Careguard Managed IP Telephony Solution, being introduced this week at NetWorld+Interop 2004 Las Vegas, includes an assessment of customers' networks, design, configuration, installation, management and monitoring of the network.

The provider is delivering the service in partnership with ShoreTel, which provides the phones and IP PBXs. If other network gear needs upgrading, Vanguard uses its own routers and HP-based LAN switches, or those of another vendor if the customer prefers.

Turning the monitoring and management of its ShoreTel gear over to Vanguard saves Larry Woodall about a half hour per day, says the telecom analyst for National Commerce Financial in Durham, N.C. In most cases the trouble turns out to be that someone has unplugged an IP phone or turned off a power strip, he says.

In these cases, Vanguard contacts National Commerce's help desk, which can generally talk the end user through resolving the problem, Woodall says. "I don't have to come in in the morning and look at the stuff," he says.

In addition, Vanguard is monitoring CPU use of the ShoreTel telephony server, something National Commerce would not likely do on its own, Woodall says. The provider also monitors quality of service for voice traffic and bandwidth use, and provides a monthly performance report. It also conducts a quarterly review of the network to suggest changes to improve voice quality.

With Careguard Managed IP Telephony, customers buy the hardware and pay a monthly fee based on how many services they opt for, the number of devices monitored and whether customers are using other Vanguard services.

NETWORLD + INTEROP

Vanguard also is announcing Careguard for Application Performance, which monitors specified software applications and makes adjustments to ensure they are performing up to set standards. The provider draws performance data from network switches, routers and servers, and from its own probes to analyze traffic flows and bandwidth consumption.

The price of Careguard for Application Performance is based on the number of devices monitored and the number of applications managed.

This new service is part of a broader grouping from Vanguard called CareWorks that includes monitoring of transactions, servers and operating systems, traffic flow, quality of service and network security.

Vanguard sells its services directly to businesses and is the outsourced provider of some AT&T managed services. Vanguard specializes in serving retail and financial services companies and others that have large numbers of sites, but lack highly trained IT staff at each site. ■

MCI

continued from page 37

The majority of MCI's capital expenditures will go toward back-office system consolidation, and service and product development, says Jack Wimmer, vice president of network architecture and advanced technology. MCI is emphasizing security and VoIP service developments, he says.

Wimmer says the $38 billion MCI spent before filing for bankruptcy puts the carrier in good shape to roll out new services without major network overhauls.

Infonetics' Mitchell says MCI spent an "absurd" amount on its network in 2000 and 2001, 25% and 35% of revenue, respectively. But as with all other providers, spending was cut back dramatically in 2002.

MCI also plans to keep operating expenses in check, in part by consolidating its access, edge and core network facilities.

For example, the carrier plans this year to deploy multi-service edge devices to eliminate the need to support multiple types of devices depending on which data network customers are accessing. Within the next six months, the carrier will detail plans to lower its access costs and offer users more flexibility, Wimmer says.

The carrier also is consolidating its networks at the core. Late last year MCI moved all former Intermedia frame relay customers to its frame relay network. The Intermedia frame network was one of three the carrier has been supporting for years.

The other frame relay infrastructure is WorldCom's old network.

MCI has emerged from bankruptcy with $5.7 billion in debt, lower than its main competitors AT&T ($8.7 billion) and Sprint ($16.4 billion). MCI also emerged with about $5.6 billion in cash, about $2 billion of which it will spend to settle some of its bankruptcy claims. MCI says it expects to generate about $800 million in cash this year.

Despite the cash influx, MCI says it likely will post a net loss for 2004. Neither AT&T nor Sprint has given Wall Street comparable guidance. ■

Our customers are thrilled.
Our competitors are worried!

Breakthrough Performance, Massive Scalability

Access Management. Application Security. Application Acceleration.
Learn more about Enterprise / Service Provider Class SSL VPN and Application Acceleration solutions from Array Networks.
Goto: **www.arraynetworks.net/nw**
Or call: **1-866-MY-ARRAY** today

ArrayNetworks®
The Application Networking Company

www.arraynetworks.net

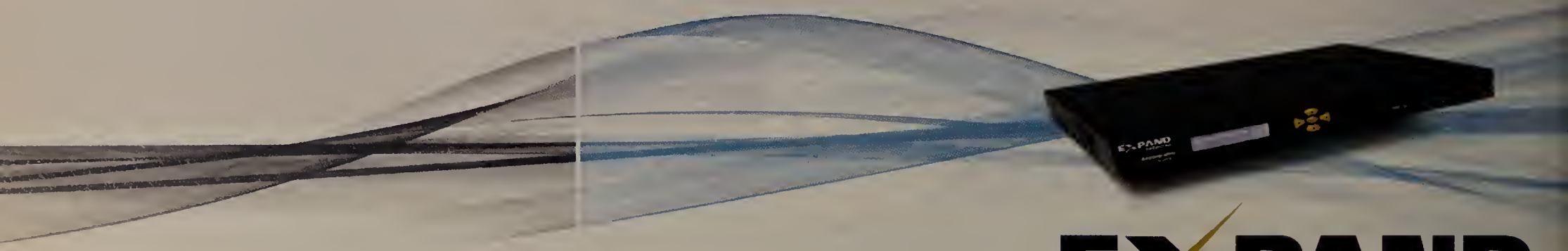
Ready to take traffic management to the next level?

Current methods of managing traffic by establishing and constantly tweaking policies are labor-intensive and inefficient.

Take traffic management to the next level by deploying application acceleration and bandwidth efficiency tools that reduce WAN costs and improve response times. Expand Networks offers a complete framework for easily—and automatically—improving the performance of distributed enterprise applications.

Accelerator™ appliances allow you to increase average network capacity and improve application response times by 100-400%, stop bandwidth abuse and align network resources with business priorities. Learn how to gain an accelerated ROI in 3-9 months, and find out why more than 1,000 customers have already deployed more than 20,000 Accelerators in over 70 countries.

Reap the rewards of automated application traffic management today.
Try our demo at www.expand.com/demo



EXPAND networks

Net.Worker

■ PRODUCTS, SERVICES AND STRATEGIES FOR TYING TELEWORKERS TO THE ENTERPRISE

New access services meet SOHO needs

■ BY TONI KISTNER

Since Citrix Systems validated GoToMyPC by buying ExpertCity earlier this year, a new crop of small service providers are standing a lot taller.

Three companies — Positive Networks, RemotelyAnywhere and ByteTaxi — each recently rolled out simple, secure and affordable remote-access services for small and midsize businesses and professional users where a VPN is a bad fit.

Full access

Positive's PositivePro service provides a 168-bit encrypted IPSec VPN tunnel to all network resources. The client version gives users a full LAN connection over Secure Sockets Layer VPN. PositivePro WebTop provides access via any Web browser to e-mail, files, drive shares, the company intranet and client-server applications. PositivePro has a host of features, including remote desktop access like GoToMyPC. Other features include a personal firewall for each connected system, anti-virus protection, support for SecurID and other advanced security schemes, network reporting, drive sharing, data backup, private file areas where folders and drives are hidden until the user is authenticated, and remote application distribution.

The company differentiates itself from other VPN service providers by offering fast deployment at an affordable price.

"We've opened this up to a group of users who couldn't even consider remote access," says Evan Conway, Positive's executive vice president of marketing. "We get calls from companies that are stuck, saying 'My boss needs remote access for next week.' We say, 'How about by this evening?'"

The user downloads the PositivePro client onto any network server. Positive connects to it and then creates a VPN tunnel between its data center and the customer's network. Next, a support engineer configures each user's access over the phone using its policy manager, a Web-based tool that automatically maps the appropriate resources. The time from when a user calls Positive to when his first remote user is activated can be as little as one hour, Conway says.

Positive targets companies with between 50 to 1,000 users. "There are 600,000 businesses between 50 and 1,000 employees, and they don't know what they're doing when it comes to remote access," Conway says. "The 75-person shop has one IT guy who's job it is to fix PC crashes and keep the LAN up and running, not to understand the inner workings of remote-access security."

Workstation access

Since 1999, RemotelyAnywhere has offered remote system administration and performance-monitoring services to large companies, mainly in Europe. The tools are highly secure and include a file management system that transfers only file changes. A year ago, when the company realized its customers used them for remote access, the company built LogMeIn, a remote desktop access service similar to GoToMyPC. RemotelyAnywhere hosts for each client a dedicated gateway, which remote users connect to gain access to their computer.

"A lot of times a VPN isn't practical [given] the cost and time to deploy. Or you need a system at a user site temporarily," says Michael Simon, CEO of the company.

Target machines need to be Windows systems, but LogMeIn lets users connect from any browser-based device. By connecting Windows machines, you can perform remote printing — meaning you can open Quicken at the desktop in the office and print a spreadsheet to your home local printer. The Click2Share option lets you share large files securely.

Because the original product was built for mission-critical server maintenance, LogMeIn includes powerful security. The datastream is 128-bit or 256-bit encrypted. Unlike GoToMyPC Personal Edition, LogMeIn doesn't bypass the network's authentication systems, but forces you to use them to access the target system. An active defense layer creates a blacklist of IP addresses that have failed three times to gain access to the PC. For small companies and individual users, RemotelyAnywhere offers an optional two-factor authentication system that requires username, password and an authentication code generated by a wireless e-mail device the company provides.

"The remote-access battle will be won on the security front," Simon says.

Workstation file access and sharing

For single users and companies with up to 50 users that just need a better way to manage data between PCs — share it, sync it, remotely access it — there's ByteTaxi FolderShare. Users download an 850K client on the target machine and on the client machine. Requests go through ByteTaxi's network, which uses RSA Security key certificates to authenticate clients. The clients also authenticate one another through the server before each transfer. The data stream is 256-bit encrypted.

Users then create and name a FolderShare library, a data repository that sits on both machines. Changes to the data are updated and files synchronized automatically. When users go on the road and want to access a FolderShare library but don't want to download all the files, they can configure the system to synchronize file placeholders and then select only the files needed for download.

"We've created a straight, secure, file-sharing environment that works in the background so you never have to worry about it," says FolderShare President Michael Merhej.

Friends and colleagues can share access to various FolderShare libraries. ■

Anytime access

New services make ad hoc secure data connections easy and affordable.

Company: Positive Networks
Product: PositivePro; PositivePro WebTop
URL: www.positivenetworks.com
Price: 10 users: $199 per month plus $900 setup fee. Fee is halved for users who sign up for a one-year contract, waived for those signing up for two years.
Access: Full VPN access to servers, e-mail, client-server applications, desktop remote access.

Company: RemotelyAnywhere
Product: LogMeIn
URL: secure.logmein.com
Price: $20 per month for two PCs; $10 per month for additional PCs. Or, $100 per year for two PCs; $80 for additional PCs.
Access: Between workstation PC resources (applications, data) and browser-based devices.

Company: ByteTaxi
Product: FolderShare
URL: www.foldershare.com
Price: $5.90 per user, per month; free trial version lacks file compression, encryption and remote synchronization.
Access: To files and folders on two disparate systems.

Short Takes

■ **Intellon** and **Comcast Cable** jointly announced a market trial of Intellon's HomePlug technology. HomePlug 1.0 technology transmits data at 14M bit/sec over residential power lines. Comcast plans to use HomePlug for cable modem installations and home networks. Intellon also announced a partnership with music TV network **Music Choice** to demonstrate a HomePlug audio system. Service providers will be able to offer customers the ability to stream Windows Media Audio files from a PC from a cable box to a HomePlug audio device plugged into a power outlet.

■ **Motorola** announced its **Home Media Architecture,** a system that will let service providers offer multiroom digital video recording and media distribution to their customers. HMA works with legacy digital set-top boxes and interactive program guide and video-on-demand applications. Service providers can use the HMA platform to offer IP-based services such as home security monitoring, smart home management, remote education and health management.

TELEWORKER BEAT

Toni Kistner

Broadcom also simplifies WLAN security setup

For a little while there, Buffalo Technology was a superhero. It was the only wireless LAN maker to acknowledge that selling boxes with disabled security wasn't just ethically suspect but stupid business, and the only one to come up with a system that configures Wired Equivalent Privacy and Wi-Fi Protected Access with the push of a button (see www.nwfusion.com, DocFinder: 1935).

Now it turns out, Broadcom's been wearing the big S under its shirt, too.

Last week, the leading WLAN chip maker announced a new version of its 802.11g chipset, branded 54g, that greatly simplifies the Service Set Identifier (SSID) and WPA setup, and extends the range of a 54g LAN up to 50%, according to Jeff Abramowitz, Broadcom's senior director of marketing.

The week before, Broadcom demonstrated a beta version of the technology — SecureEZSetup — for me in New York. Or, more accurately, I configured WPA on Broadcom's WLAN. What did it take? I installed the SecureEZSetup software on the client, and the software found the router. A wizard popped up asking me to choose from three questions — mother's maiden name, street you grew up on, pet's name. Then it asked for my birthdate. Oh — and I had to click OK, too.

In answering those two questions I'd configured the SSID and WPA, the strongest wireless security available. Configuring WPA this way is more secure than typing in keys you make up yourself because SecureEZSetup generates the keys randomly so they're harder to crack, says David Cohen, Broadcom's senior product marketing manager and chairman of the Wi-Fi Alliance's security committee.

Considering Wal-Mart now sells Linksys WLAN gear, and 80% of wireless users don't set up security, according to market research firm Forward Concepts, it really has to be this easy.

Products from Linksys and others stamped with the SecureEZSetup logo are expected in the coming months.

But wouldn't it be great if we didn't need a special logo — if automatic security configuration was built into the 802.11 specification, standardized by the Wi-Fi Alliance? Coincidentally, the group's managing director, Frank Hanzlik, also was touring the Northeast; Cohen said he and Abramowitz are trying to set up a meeting.

Given that Broadcom claims more than 70% of the PC-based WLAN chip market, where does SecureEZSetup leave Buffalo?

Morikazu Sano, Buffalo's vice president, is unfazed. Broadcom is concentrating on the PC and WLAN vendors, and Buffalo on the consumer electronics manufacturers.

"We're foreseeing a time when the digital home network is wireless, and vendors need to provide a stress-free environment," Sano says.

"We're targeting a market where you don't need a PC, that's why we have a physical button. With Broadcom's, you have to type. We don't even require that," Sano adds.

Two questions, or a button? That's a tough one. If you're helping your mom set up a WLAN from scratch, go with Buffalo AOSS. Mixed-vendor networks should go with Broadcom gear. If Buffalo uses the new 54g chips, you'll get both.

Kistner is managing editor of the Net.Worker section of Network World. *She can be reached at tkistner@nww.com.*

enterasys™

Networks that Know

See us at NetWorld+Interop 2004
Booth #2029

These days, no network is free of threats. That's why you have to assign network security privileges to everyone. Employees, customers, and partners. You need to set an acceptable use policy that dictates what each of them can and can't access. Until now, you had to do this manually.

Not anymore. Now you can do what Baylor University did. Implement an Enterasys Secure Networks™ solution with a unique, policy-based system that empowers the network to allocate resources based on specific users and their roles. The network "sees" who the user is and assigns privileges accordingly. This improved control also gives you more security.

It's all about giving you a smarter way to network with central, intuitive management. Find out more by visiting **enterasys.com/seconds**. Or ask any one of the many enterprise customers we've worked with for years.

WE'VE EXPANDED OUR COVERAGE TO INCLUDE ALL TWO DESTINATIONS.

Safe, simple roaming around the world and—for the first time—around the workplace.

Now, everywhere is There.

If iPass can deliver secure, reliable connections in over 150 countries, why not do the same in your office? Now the iPass® Wireless LAN Roaming service lets you integrate corporate WLANs into your connectivity mix—weaving a world of dial-up, Ethernet and Wi-Fi connections into a single, policy-managed solution. So even when your users are Here, they're There.

Get the iPass Security Best Practices Guide.

www.iPassIsThere.com

iPass®

Enterprise Connectivity Services

Technology Update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

Proxy appliances control Web access

■ BY JEFF HUGHES

Pervasive Internet access and the relative ease of installing Web-based applications have empowered users with the means to quickly load browser-based e-mail, instant messaging, peer-to-peer file-sharing clients and more on enterprise networks.

As the use of these Web-based applications and the traffic they generate continues to accelerate, IT staffs are deploying proxy appliances to safeguard against the liability, productivity and security risks introduced when unsanctioned Internet applications are randomly installed on the corporate network.

A proxy appliance is positioned between users on a network and the Internet and serves as a central point of control over employee Internet use. A termination point for Web communications on the network, the proxy appliance can apply numerous policy-based controls to Web traffic and requests before delivering content to end users.

Setting up a proxy appliance requires only a network connection and an IP address. The appliance is installed behind or in parallel with the network firewall to intercept Web protocol traffic such as HTTP, HTTPS, FTP, IM and SOCKS.

When a user first attempts to access the Internet or launch a Web-based application, the proxy appliance goes to work by prompting the user to present his network credentials. This is executed in concert with the organization's existing authentication service, such as Lightweight Directory Access Protocol, Windows domain and RADIUS. After the initial logon, the proxy appliance recognizes the user's credentials and transparently applies policy controls to all subsequent Web requests.

From this point forward, policy controls are enforced for everything a user does on the Web. This control is based on a set of comprehensive triggers, such as time of day, location, protocol, user agent and content type. Any one of these triggers prompts the proxy appliance to enforce any number of actions established by an administrator, such as allow, deny, notify, transform content, rewrite header and remove-and-replace. These fine-tuned controls can be applied across an organization or to one user, regardless of where the user logs on.

After policy is applied to a user's request, Web communication is sent to the Web server. Web servers respond and direct Web content back to the proxy appliance, where additional policy controls, if configured, can be enforced on the incoming content.

As an example, an outbound request might contain a peer-to-peer user agent type that corporate policy does not permit. The peer-to-peer request can be blocked, and the user can be notified that the request has been denied. Other requests not subject to the policy are forwarded to the external destination server, where the server then responds to the proxy's request for content.

Because a proxy appliance sits in the middle of all Web communications, it is an ideal platform on which to run multiple security functions, including URL filtering, IM control, content security and Web virus scanning. URL filtering installed on the appliance, for example, achieves dramatic performance gains through the combination of integrated caching and dedicated hardware. Content security lets an administrator configure policy to block Multipurpose Internet Mail Extensions types and file extensions, strip and replace active content, restrict uploads or downloads, rewrite or suppress headers, and apply method-level protocol controls.

For additional performance gains, administrators can purchase proxy appliances with multiple processors and extensible hardware options such as multiple disk drives, interfaces, memory, bridging and Secure Sockets Layer accelerator cards.

Pumping up performance

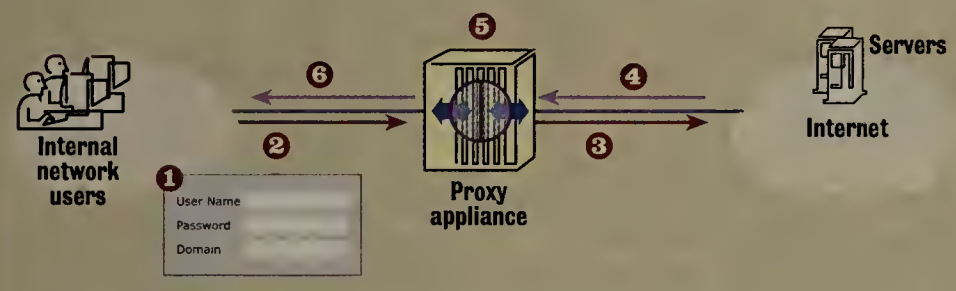
In the past, software-based proxy servers provided sufficient levels of Web control. However, administrators are feeling the pain as they attempt to patch and maintain software-based proxies in the face of relentless security threats and more highly saturated Web environments that demand increased performance. A proxy appliance provides abundant policy controls wrapped in performance-based hardware to give organizations a viable option for gaining visibility and control over their employees' Web communications.

Hughes is director of technical marketing for Blue Coat Systems. He can be reached at jeff.hughes@bluecoat.com.

■ HOW IT WORKS

Proxy appliance

Positioning a proxy appliance between users and the Internet provides control of Web-based activities.



1. User logs on to network through a proxy appliance and authentication service.
2. The user sends Web content or Web application requests to the proxy.
3. The proxy appliance forwards requests for Web content to the Web server.
4. The Web servers respond and direct content to the proxy appliance.
5. The proxy appliance applies policy restrictions if needed to incoming content or Web applications.
6. The proxy appliance sends content and server response messages back to the user.

Ask Dr. Internet

By Steve Blass

Is there an easy way to add WYSIWYG editing controls such as boldface, italics and spell-check to HTML Web page text-entry forms?

HTMLArea, available at www.nwfusion.com, Doc Finder: 1931, is a free server tool that provides WYSIWYG text editing and spell checking for Web forms. HTMLArea uses JavaScript and Cascading Style Sheets (CSS) to replace Web-form text areas with a word-processing interface. Boldface, italic, justification and other features are provided, along with cut, paste and a clipboard. To install, unpack the ZIP file into your Web server document tree. Convert your existing Web forms to use HTMLArea by adding JavaScript and CSS source file links to the document head (shown in the provided example.html file), and invoking onload= HTMLArea.replaceAll() in the opening body tag. The user's editing mark-up is included as HTML in the textarea field value submitted to the server, which might require some server adjustments to avoid losing format information. The optional spell-check support in HTMLArea requires Perl, the Text:Aspell perl module from CPAN (DocFinder: 1932) and GNU Aspell (from aspell.net), all available at no cost for Windows and Unix.

Blass is a network architect at Change@Work in Houston. He can be reached at dr.internet@changeatwork.com.

GEARHEAD INSIDE THE NETWORK MACHINE

Mark Gibbs

RSS technology revisited

This week, RSS tools! First we have a Windows RSS aggregator or reader (the terms are used interchangeably) called Feedreader for reading your favorite RSS feeds. RSS stands for Rich Site Summary, Really Simple Syndication, or RDF Site Summary — no one seems to know for certain.

If you haven't come across RSS feeds before, check out our previous foray into the topic (see www.nwfusion.com, DocFinder: 1936) and XML.com story (DocFinder: 1937).

Feedreader was released with a Gnu General Public License (GPL) and was free. We say "was" because it is no longer under development. That said, it has a feature we really like that we haven't found in another reader: A built-in Web server that lets us integrate its output with our intranet.

Feedreader can understand RSS 0.9, 0.91, 0.92, 1.00 and 2.0, plus the Dublin Core and Slashback extensions, and supports Outline Processor Mark-up Language (OPML).

There are actually nine versions of RSS with all sorts of technical issues that limit backward-, forward- and sideways-compatibility. See the "Dive into Mark" blog (DocFinder: 1938) for an interesting and rather critical discussion.

The second one, the Dublin Core, from the Dublin Core Metadata Initiative, is interesting because it is a set of metadata standards "that support a broad range of purposes and business models," and has an RFC (see DocFinder: 1939).

Dublin Core has been described as "a metadata pidgin for digital tourists who must find their way in this linguistically diverse landscape. Its vocabulary is small enough to learn quickly, and its basic pattern is easily grasped" (quoted from "A Grammar of Dublin Core" by Thomas Baker of the German National Research Center for Information Technology).

The most useful document concerning RSS is "Expressing Simple Dublin Core in RDF/XML" by Dave Beckett, Eric Miller and Dan Brickley (see DocFinder: 1940).

Regarding "Slashback extensions," we wish we could point you to some background but we could find nothing.

Finally, Outline Processor Mark-up Language, according to Dave Winer, the godfather of RSS and OPML, is "a file format that can be used to exchange subscription lists between programs that read RSS files." What is particularly interesting about OPML is that it describes, as its name implies, outlines, which means that it is applicable to all sorts of tasks where structured lists are required (see DocFinders: 1941 and 1942).

The only negative about Feedreader — apart from it now being "abandonware" — is that the formatting of its Web output is "compiled in" the executable code. As we are not Delphi 7 programmers, moving the embedded formatting to external templates that would be loaded on start-up is not going to happen. We think that a bit of dynamic HTML hocus-pocus might work: Load the server output into an in-line frame (an iframe) in another Web page, then find the content of the iframe by exploring the document object model and applying a cascading style sheet. If you feel the desire for everlasting Gearhead fame, feel free to send us your solution.

If you want something that isn't abandonware, check out the free GPL'ed SharpReader (DocFinder: 1943), which is still under development. This software requires the Microsoft .Net Version 1.1 framework and supports all RSS versions: ATOM (a competitor to RSS — see DocFinder: 1944), Dublin Core, content:encoding (this means that rich in-line content in HTML such as graphics is supported), and xhtml:body (the big boys' XML version of content:encoding).

Another free, GPL'ed RSS utility worth checking out is Syndirella (DocFinder: 1945). Based on the .Net Version 1.0 framework, Syndirella supports all the variants of RSS and OPML import, and can even scrape Web sites that do not offer a news feed and treat the data as if it were RSS.

Syndirella also addresses one of the big problems with RSS usage: needless feed downloads. Let's say that you like to read the Gibbs blog (no, it doesn't exist yet) and its RSS feed is, say, 50K bytes. If you check that feed every hour then you will be downloading something in excess of 600K bytes per day. And if you are doing that in concert with, say, 20,000 other people, the Gibbs server will be delivering 1.2G bytes of content every day. But as the feed might only update a couple of times per day, that's a lot of wasted bandwidth on everyone's part — particularly the Gibbs server. But we've run out of column bandwidth.

Next week: Down with wasted bandwidth. But waste a little writing to gear head@gibbs.com.

CoolTools

Quick takes on high-tech toys

By Keith Shaw

The scoop: Zire 72 from palmOne, about $300.

What it does: One of two new PDAs from palmOne (the other is the low-end Zire 31), the Zire 72 is an upgrade of last year's Zire 71, one of the first Palm PDAs to include a digital camera. This year's model includes a 1.3-megapixel camera built into the back. PalmOne's tag line for the device is "For work. For play. For life." The work part means typical PDA functions including a personal organizer, Office integration for Word and Excel documents, and a Bluetooth wireless connection. The play part means features like the digital camera, video capture and an MP3 player. The Zire 72 includes 32M bytes of memory (with 24M bytes available for the user), and runs off the new ARM-based 312-MHz Intel PXA270 processor.

Why it's cool: We're big fans of reducing the number of devices to carry around, so a PDA that includes a digital camera and a good MP3 player (songs and videos run off a Secure Digital I/O card, sold separately) is always appreciated. The digital camera has improved slightly since the Zire 71 days, but the images are still only Web- and e-mail-worthy. Still, for those times when you don't have a digital camera (but you do have a PDA), having the camera can help catch spontaneous moments, and the 1.3-megapixel camera is better than the current slate of camera phones.

Grade: ★★★★ (out of five)

PalmOne's Zire 72 includes a 1.3-megapixel digital camera.

The scoop: Vaio desktop (PCV-RS530G), from Sony, about $1,300.

What it does: A desktop system that includes some very nice multimedia options, including a TV tuner and personal video-recording application. When you connect a cable TV line to the computer, these applications let you record shows or let you watch TV directly on the computer.

This can save space in a limited area (such as a college dorm room), or in an office where you don't want to place a separate TV or monitor. The additional DVD burning and video editing applications let you convert your saved recordings onto DVDs. With a number of USB 2.0 and i.Link (IEEE 1394) ports, you also can attach a number of different peripherals, making it a complete multimedia system. The system comes with a 3.2-GHz Pentium 4 processor, at least 512M bytes of RAM and an ATI Radeon 9200 graphics card to keep up with all the video and multimedia projects you can think of.

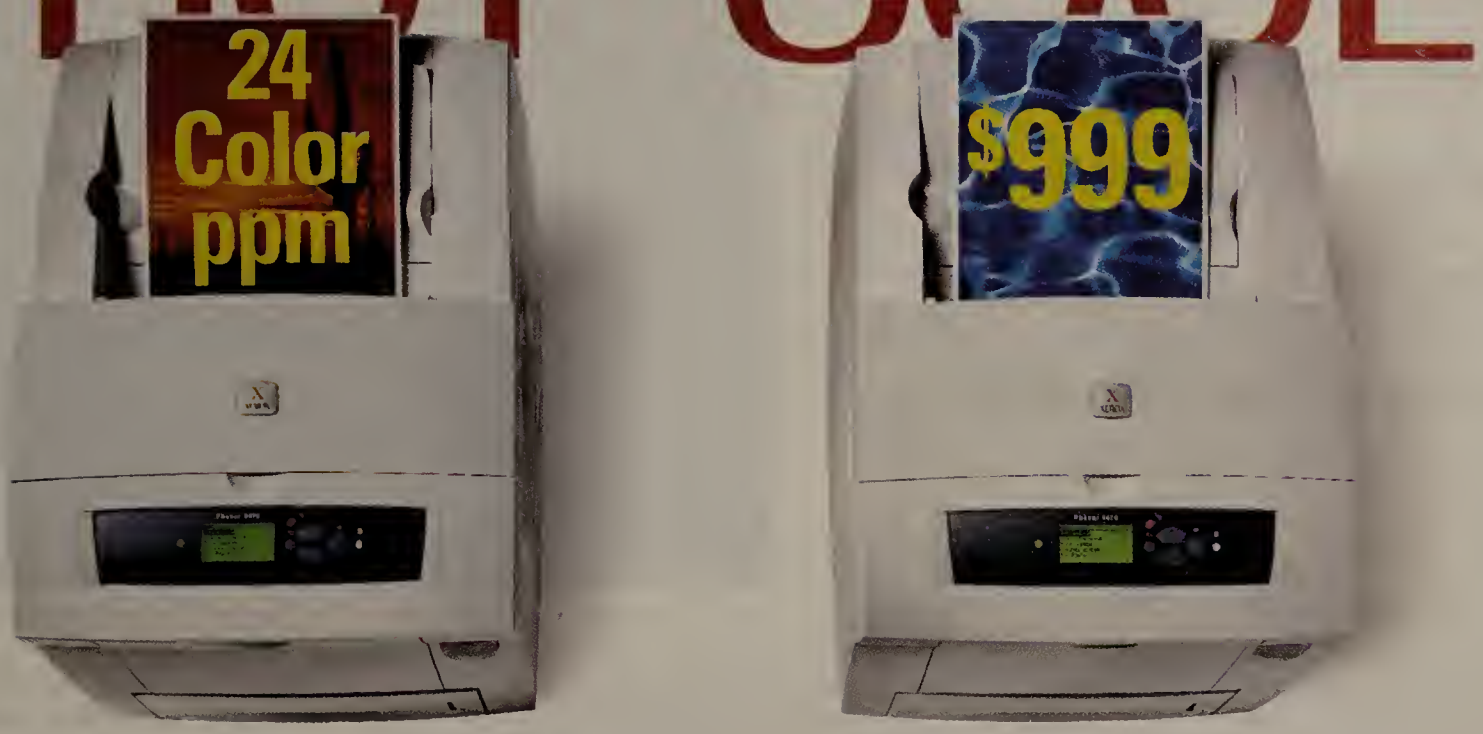
Sony's new desktop system includes a bevy of multimedia features.

Why it's cool: Sure, you can get a Media Center PC, but the systems we've tried haven't impressed us much. The Vaio desktop system pretty much does everything else that a Media Center PC does, but with Windows XP. We love being able to watch TV and compute at the same time, so the addition of the TV tuner card was a definite plus.

The Giga Pocket Personal Video Recorder pretty much acts like a TiVo or ReplayTV box, with a free electronic program guide available through the Internet. It was easy to save TV shows onto the hard disk, edit out the commercials and save to a DVD. It let us create DVDs of our favorite TV shows without having to wait a few years for the eventual commercial DVD to come out.

Grade: ★★★★★

Shaw can be reached at kshaw@nww.com.



It's hot and cool at the same time. The Xerox Phaser® 8400 is the fastest color printer in the world for under $1000.* There's a new way to look at it.

Sizzling performance. Refreshing price. Not only does the Xerox Phaser 8400 deliver 24 pages per minute in black and white, but it produces brilliant color prints at the same dazzling speed. For under $1000! Color is consistently clear and vivid, print after print. Your first page out is an industry-leading 6 seconds. And when it comes to convenience, nothing is cooler than the Phaser 8400's unique and reliable solid-ink technology which makes changing our ink simple, and clean. For more about our full line of Xerox network printers, digital copiers and multi-function systems, just call us or visit our website today. Our whole line is cool and hot.

Learn more: xerox.com/office/1964 Or call: 1-877-362-6567 ext. 1964

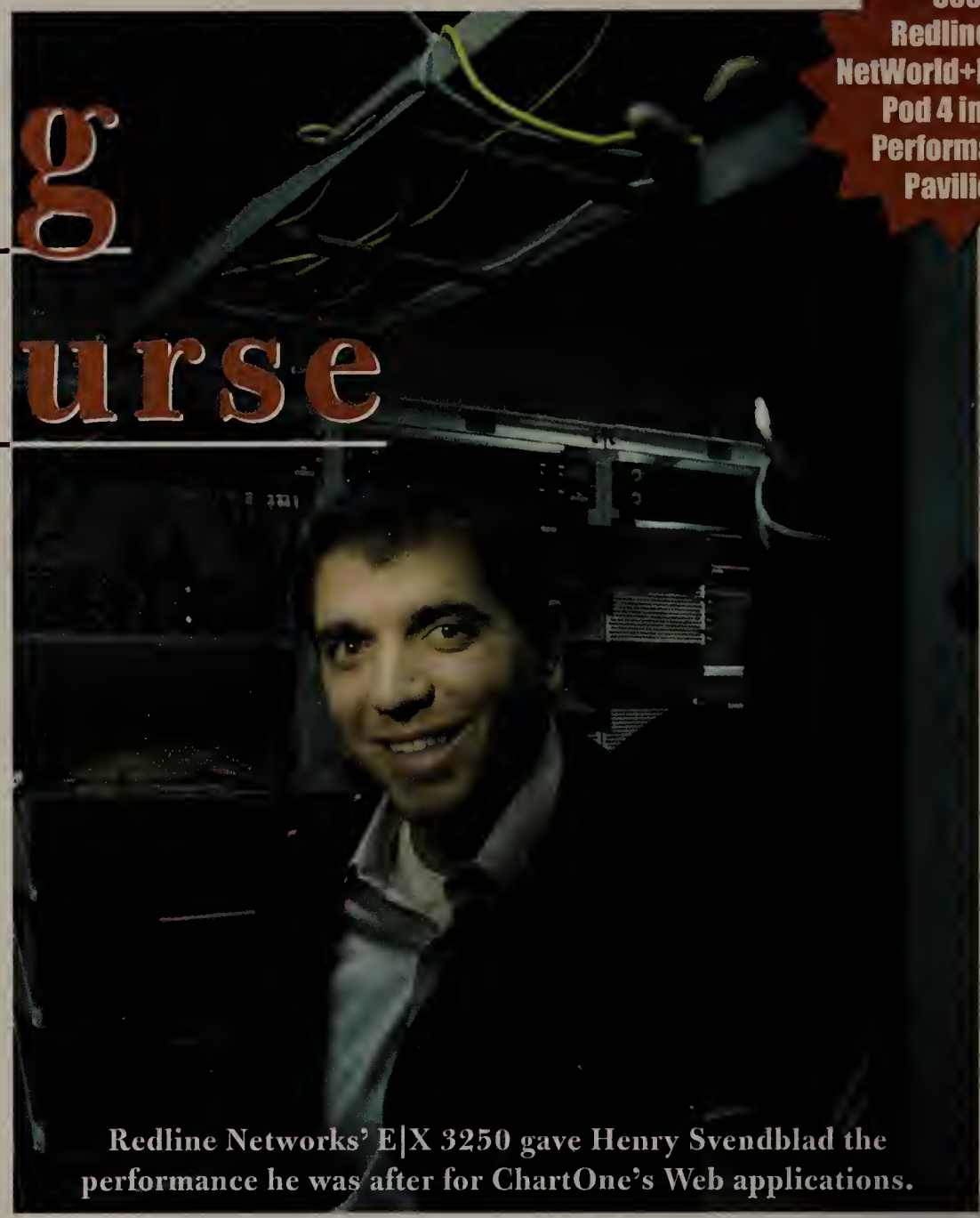
THE DOCUMENT COMPANY
XEROX.

* Based on manufacturers rated speed and estimated retail price

Charting a Web Course

See Redline at NetWorld+Interop, Pod 4 in the Performance Pavilion

Redline Networks helps medical records management firm ChartOne cure network pains and boost the business case for its Web-enabled ERP apps.



Redline Networks' E|X 3250 gave Henry Svendblad the performance he was after for ChartOne's Web applications.

Photograph by Robert Houser

NO IT EXECUTIVE LOOKS FORWARD TO ASKING upper management to spend $200,000 on a major system upgrade. But Henry Svendblad, director of IT at ChartOne, Inc., felt he had little choice.

ChartOne, based in San Jose, California, sells technology and services that help health care institutions easily and cost-effectively access and manage patient records. To better serve its customers, which represent 20% of hospitals in the U.S., and to ease the burden on its own IT staff, the company wanted to migrate its ERP applications to the Web.

Like many companies transitioning to Web-based applications, ChartOne hit performance snags that no amount of application tuning and new hardware could cure. Only after two years of trial and error did ChartOne find a cure in Redline Networks, which makes a family of appliances that deliver a broad set of capabilities to ease the network burdens and boost the business case for Web-enabled applications. With Redline's E|X 3250 enterprise application processor handling I/O processing, connection management, compression, load balancing and SSL processing, ChartOne customers and internal users are now experiencing the performance they require — and the company's IT group is realizing the administrative benefits that Web-enabled applications can bring.

ON THE WEB TRAIL

ChartOne's odyssey began in July of 2001, when the company began migrating its homegrown client/server enterprise applications to Peoplesoft 8, a Web-based ERP suite. "We were expecting growth of 20% to 30% a year, and we felt we needed a big ERP system," Svendblad says. In addition, thin, standardized browsers would require far less IT support than fat, homegrown clients.

If ChartOne was going to offer Web-based patient records management services, Svendblad also felt the company "should eat our own dog food" and use a Web-based application platform internally.

Webification proved to have its challenges, however. As more application modules and users moved onto the new infrastructure, response times slowed to a crawl. Employees at the company's 10 remote offices sometimes spent hours waiting for tickler screens that had taken minutes to display under the old client/server system. The 10- to 15-person offices had plenty of bandwidth, IT staffers knew: In anticipation of the migration to Peoplesoft 8, they'd deployed T1 links to each site.

Users on the corporate LAN were also having difficulties. By far, the worst off was the accounts receivable department, which processes more than 300,000 transactions per month. Productivity had dropped by 20% because of response time degradation. "During peak usage periods, it was taking people minutes to go from screen to screen," Svendblad says.

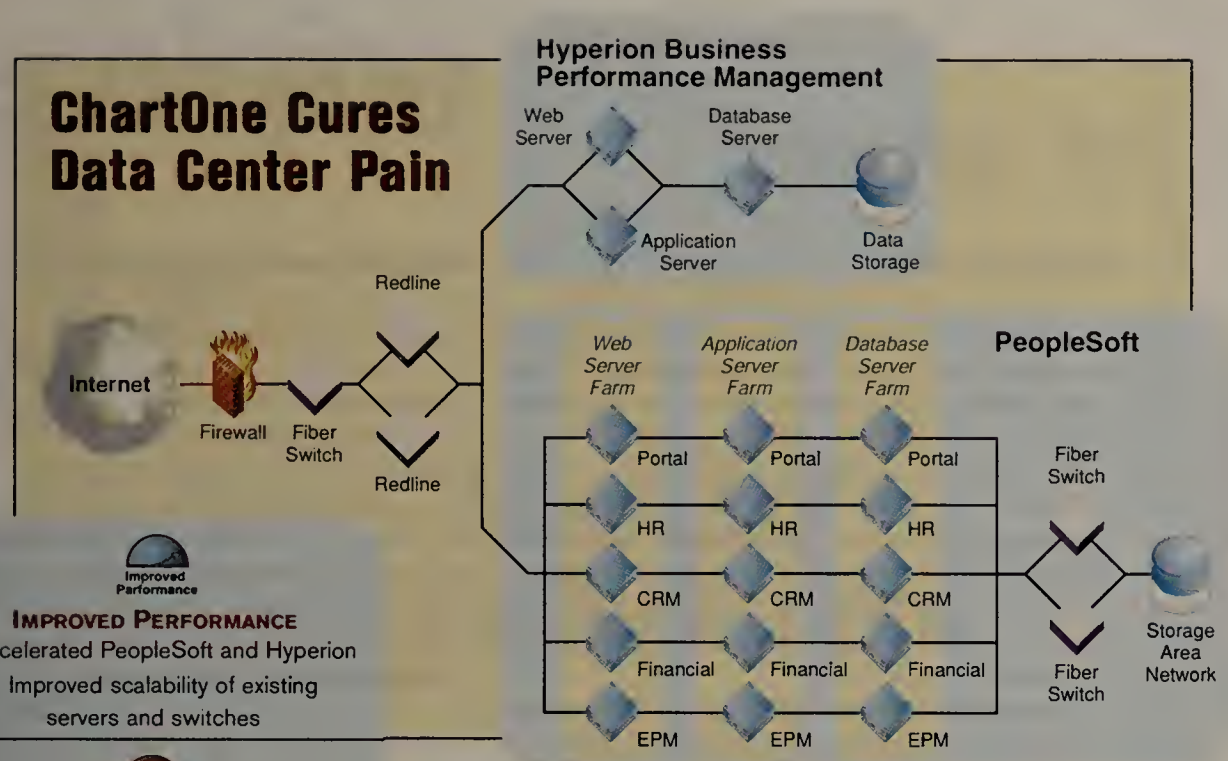
ChartOne's Challenges

- Web-enabled enterprise applications were overloading servers.
- Server processors were at 80% to 90% utilization levels during peak traffic periods.
- Slow response time over corporate LAN was hurting user productivity.
- Remote users waited hours for screen downloads.

The Redline Networks Cure

- Average server CPU utilization during peak usage now between 10% and 15%.
- Response time returned to desirable levels for local and remote users.
- Remote sites no longer need terminal servers.
- Bandwidth consumption decreased approximately 70%.
- Savings of $200,000 by avoiding major hardware upgrades.

Produced by NetworkWorld CUSTOM MEDIA SOLUTIONS



IN SEARCH OF A CURE

As user complaints mounted, the IT staff began looking for remedies. PeopleSoft and Oracle — ChartOne's application vendors — initially suggested fine-tuning their applications. "With a thin Web client, ERP systems involve complex querying in the background," Svendblad explains.

When tweaking back-end software produced little improvement, ChartOne tried upgrading its server hardware. It deployed another Sun 420R application server and storage box, then migrated the main financial server from a 420R to a more powerful SunFire server. "Performance improved slightly, but we were still looking at CPU usage in the high 80% to 90% range during peak processing time," Svendblad says. "And our phones were still ringing off the hook."

Pressed for answers, ChartOne even took the radical step of supplying remote offices and home workers with terminal servers. While that substantially improved response time, maintaining the devices offsite was a major burden on the IT support staff. "It was like we'd gone back to a client/server setup," Svendblad says, noting the setup also strained budgets and IT resources.

Meanwhile, Web and application servers were still maxing out during peak usage periods. A major upgrade seemed inevitable. "It looked like we needed a new [BEA Systems] WebLogic server, a new database server and a third server for finance," Svendblad says. His team priced out three SunFire servers on the second-hand market at about $50,000 apiece. He also budgeted $50,000 for a LAN upgrade, bringing the total budget hit to $200,000, which Svendblad calls a conservative estimate.

ONE VERY BRIEF PILOT

Just as he was about to swallow that bitter pill, a former colleague told Svendblad about Redline Networks in Campbell, Calif., and its family of appliances that help enterprises manage the network impact of Web-enabled applications and improve their business case.

In the summer of 2003, ChartOne deployed Redline's E|X 3250 enterprise application processor in front of its WebLogic servers. The Redline device took over complex scheduling of TCP requests and connection management chores for as many as 150 users, saving the Web servers' CPU and memory resources for other activities like page generation. The E|X also performed data compression to speed up server response and conserve bandwidth.

Svendblad's group started out with a pilot test within the accounts receivable group, which took the biggest performance hit after moving to Peoplesoft 8. Setting up users was simple and transparent, Svendblad reports: "I just changed the local DNS setting, and when users clicked on the PeopleSoft icon, they were routed through the Redline box. We didn't have to change anything on our existing architecture, or on the WebLogic or PeopleSoft servers."

User response was fast and dramatic. "People were asking us if we'd put some magic juice in their system," Svendblad reports. When word spread, end users not involved in the pilot "were pounding on our door saying, 'Whatever you did for her, do for me!'" It may have been the shortest pilot on record: A day after the test started, the company routed all the other users through the Redline box.

TALLYING THE BENEFITS

Once the bulk of users was online, the benefits of the Redline device really began to kick in, Svendblad reports. Average CPU consumption during peak processing time plummeted from 80% or more to less than 15%. Bandwidth consumption decreased approximately 70%.

The E|X 3250 now handles SSL encryption, as well. "We have security without burdening our servers with managing certificates or with SSL," Svendblad says. The company also saves money on SSL certificates, since it needs only one for the Redline box instead of one for each server.

Over the past year, ChartOne brought its customer relationship management, HR and Hyperion Business Performance Management applications behind the Redline box. Most recently, the company added its View Manager: Chart Management Suite of ASP offerings to the set of applications front-ended by the E|X platform.

> After ChartOne installed the Redline Networks E|X 3250, user response was dramatically faster. "People were asking us if we'd put some magic juice in their system," says Henry Svendblad, director of IT.

ChartOne's hundred-odd remote and mobile users have completely eliminated their terminal servers and use a standard Web browser to access all applications, via the E|X 3250. "The user experience is improved, and our support costs are lower," Svendblad says.

The bottom line: ChartOne successfully implemented a Web-enabled ERP platform with a "single box solution" that addresses critical Web tier issues while dramatically improving the business case by increasing user productivity and avoiding costly hardware upgrades. End users now experience the same response time levels and productivity they had with customized fat clients — but IT no longer has the support burden. Says Svendblad: "I think that's pretty impressive."

ON TECHNOLOGY

John Dix

Start-up looks to solve WLAN RF problems

Some early wireless LAN users say their largest source of headaches is radio frequency problems, everything from interference to playing with radio locations to optimize performance. Start-up Propagate Networks hopes to eradicate that.

"You should be able to just plug this stuff in and have it work, but you can't today," says Paul Callahan, vice president of business development and one of the company's three co-founders. "Wireless is really, really busted. There are all these 'a' and 'b' and 'g' options and you need to tune stuff and it involves all this planning, which is totally stupid and counterproductive."

And it will only get more difficult as the number of wireless devices increases and connectivity demands climb.

The company's answer is AutoCell, a layer of control code designed to make Wi-Fi automatic at the RF level. Propagate has convinced Chantry Networks, Bluesocket, Reef-Edge and Netgear to adopt its technology, which is still in beta, and hopes others will follow suit. If it can convince enough of the important players to get onboard, deploying and managing WLANs will get a lot simpler.

When AutoCell-equipped access points are installed they listen to the environment to identify interference and other networks, and then auto tune to the quietest channel. Then the access points adjust their power up or down to minimize interference and, if AutoCell is loaded on the client radios, tunes those as well. Finally, when everything is connected, AutoCell load-balances traffic across access points, optimizing network performance.

All of this is achieved by introducing signaling packets into the wireless stream, which Callahan says never represents more than 1% of all traffic, no matter the size of the network.

Product demonstrations are convincing. A roomful of different types of access points come online and adjust their power accordingly, endstations connect, and then everything balances out. This definitely would be a boon for any RF environment.

The question is, can Propagate convince enough vendors to sign on. After all, some of them fancy their RF management tools as product differentiators. And Cisco, the big fish in the WLAN pond, is said to be building its own technology.

Propagate has submitted its work as a standard to the IETF, but you can act now. Ask your suppliers about AutoCell and if they say they have something better, ask them if their competitors will embrace it. What we need is technology that spans proprietary products.

— John Dix
Editor in chief
jdix@nww.com

opinions!

Blocking is best

In Mark Gibbs' Backspin column "Wrapping up the messaging and spam tour" (www.nwfusion.com, DocFinder: 1926), he asks readers how they plan to defend their companies from spam. My company uses plain and simple blocking, using a whole bunch of blocklists (names on request). Why? Because spam filtering (SpamAssassin and similar products) just don't work. Instead, they up the ante and cause continuous escalation in the war between e-mail administrators and spammers. It's much easier to just block.

If we all started blocking, the spammers wouldn't get enough mail delivered to justify their existence. With filtering they never see the e-mails that are thrown away, and they give their clients inflated delivery figures as a matter of course.

Users don't want to see "iffy" spam, marked by filters such as SpamAssassin. They don't want to have to look at bloated spam buckets before they decide to throw the junk away. And they don't want to decide things like "spam threshold" and "words to block on." They just don't want to see the spam.

So my company runs a Web page (www.spamblocked.net/blocked.html), which we point to in our rejection notices, where anyone who takes the trouble to go there can ask to be whitelisted. So far, in a 16-month test of about 20 domains (roughly 12,000 e-mails daily), we've had three verified false positives.

We'll soon offer this solution to a few hundred more domains, offering a limited version of it as a free add-on to Web hosting companies using the DirectAdmin hosting control panel (http://directadmin.com) and announcing it as a service to the general public at www.reallystopspam.com.

Jeff Lasman
Riverside, Calif.

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

Microsoft and the European Union

Regarding Dave Kearns' column "Sorry, Microsoft, but the EU got it right" (DocFinder: 1927): The U.S. Department of Justice won the case against Microsoft, then walked away after agreeing with Microsoft that the company should play nicer (without strictly defining what "nicer" means) and not defining any substantive consequences should Microsoft continue, as it has, to be a poorly behaved, convicted monopolist. The EU did the right thing, while causing no damage at all to innovation and no significant harm to Microsoft.

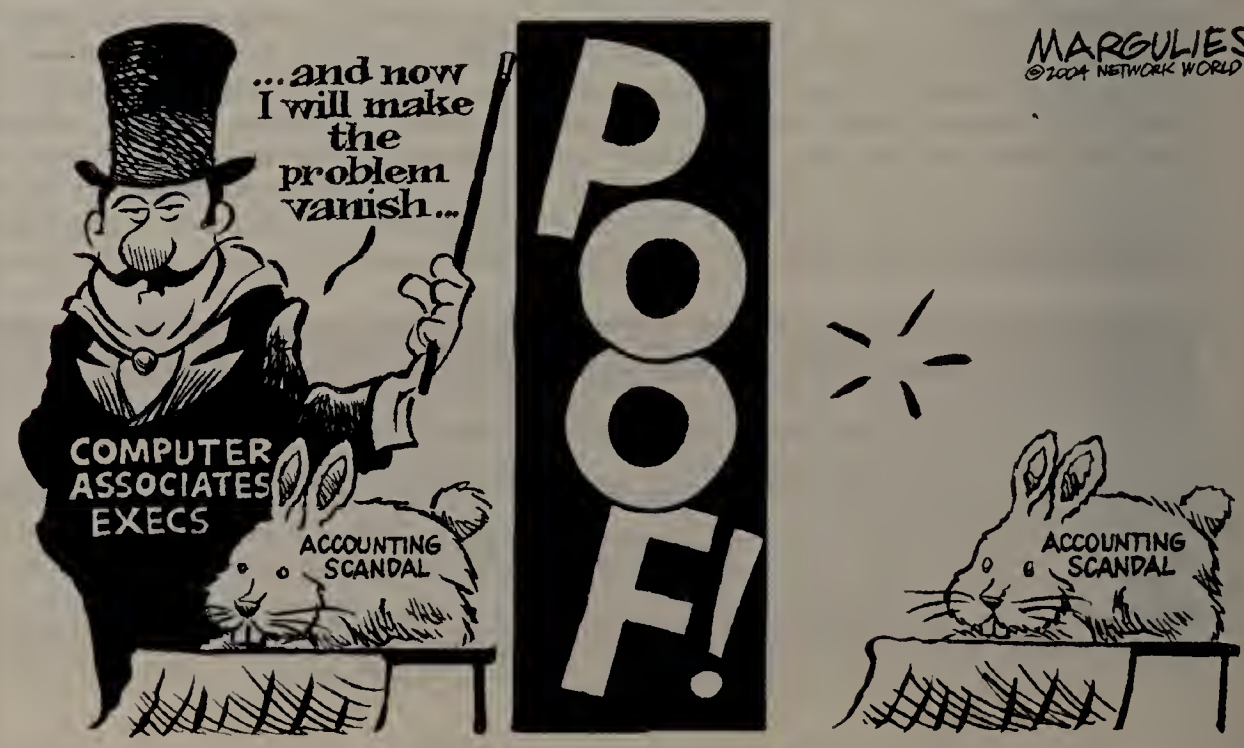
Stephen Wyman
Austin, Texas

Dave Kearns' comment that Media Player only clogs the network is like saying GUI interfaces are an annoyance to real users. We are only at the beginning of understanding how natural, unobtrusive interfaces will propel the next generation of computing. Is Kearns not at all concerned about governments telling corporations what they can and cannot bundle into their products? While anti-competitive behavior that makes it impossible for new products to come to market needs to be challenged, so does government over-reaching. Encouraging open architectures and penalizing anti-competitive architectures seems a more appropriate balance.

Jerry Monroe
Wayne, N.J.

Kearns replies: In some instances I believe that the rule of law should govern what can and cannot be bundled. There are many examples, going back many years, from industries other than our own. There's nothing in the EU ruling that stops anyone from installing Windows Media Player. As to the bandwidth issue, it should be up to the company to determine when and where bandwidth-hogging streaming services are offered, not individual users.

More online! www.nwfusion.com Find out what readers are saying about these and other topics. **DocFinder: 1924**



ON THE ROAD

Sandra Gittlen

Security: Are we on overload?

No one wants to explain after a hacker attack that they were compromised because they didn't invest in the right tools.

When Network World Lab Alliance member and Opus One senior partner Joel Snyder and I began discussing ideas for this year's security technology tour, which kicks off next week in Boston, we kept coming back to the same issue: There is so much security technology out there that it is oftentimes overwhelming.

Chances are, IT managers, in the rush to lock down their networks, have installed these technologies piecemeal. Budget approved; add another layer of security. Threat detected; add another layer of security. Need to reassure stakeholders; add another layer of security. These are all great reasons to beef up the security of your network. And doing so is not necessarily a bad strategy.

But now's your chance to "de-architect" your security strategy and make sure that the technology you have isn't a liability. Are your firewalls in the best possible position for maximum effect? Is your antivirus upgraded properly and installed everywhere it needs to be? Can you manage your enterprise password protection in a better way? You also want to make sure that you haven't built in so many layers of protection that you're overtaxing your system — or worse, that some programs aren't counterbalancing one another to create vulnerabilities.

Taking an inventory of every security tool in your network — even those at remote sites, branch offices and on mobile devices — will help you understand what you're dealing with. You might discover that you've got too many tools to manage and there is a simpler alternative that doesn't compromise defenses.

In his morning and afternoon keynote addresses for "Enterprise Security: Fail-Safe Architecture," Snyder will do a virtual assessment of today's security technologies and how you can best utilize them. He'll explain how to determine what you need and what you can do without. More importantly, Snyder will explain how to construct your overall security strategy — the do's and don'ts for dealing with vendors and your own organization.

NetworkWorld On the road with SEMINARS&EVENTS

Joining us onstage will be the leading companies in the security market, representing a cross-section of tools and services: ForeScout, Lancope, NetSolve, VeriSign and Virtela Communications. Also exhibiting their wares will be AccuData, Black Dragon Software, The Network Guys, IntraSystems, Secure Computing, Solsoft, Summit, Viack and V-One.

Let's face it: Of all the budget constraints IT managers have faced over the past few years, security has been the area least affected. No one wants to explain after a hacker attack or a fast-spreading worm that they were compromised because they didn't invest in the right tools.

Now it's time to make sure you're putting those tools to good use and not letting them become a hindrance to themselves. To register for this event, go to www.nwfusion.com, DocFinder: 1936.

Gittlen is Network World's Events & Executive Forums editor. She can be reached at sgittlen@nww.com.

INDUSTRY COMMENTARY

Frank Dzubeck

The dawn of a wireless century

The real 'triple play' communications revolution will not be over wires, but through the air.

In this first decade of the 21st century, the communications industry is at an interesting transition point. The 20th century could be called The Wireline Century, with millions of kilometers of copper wire, cable and glass fiber being installed in homes and office buildings, below and above streets, and under oceans. The 21st century is rapidly becoming The Wireless Century. The motivation for wireless technology is no longer voice, as it was in the last century, but data. This shift has been the impetus for a number of distinct technologies for delivering unique services to users.

The first wireless technology that seems to be on the verge of market introduction is ultrawideband (UWB). Based on IEEE 802.15, UWB is designed for extremely high bandwidth (100M to 400M bit/sec or higher) across a short distance (less than 32 feet, as mandated by the FCC) in a point-to-multipoint architecture. UWB is widely seen as the equivalent of wireline USB, wirelessly connecting printers, monitors, storage devices and other equipment to PCs or servers.

The second wireless technology that is revolutionizing communications is IEEE 802.11 (Wi-Fi). This technology is rapidly becoming a replacement for wireline Ethernet. In addition to use in corporate buildings and homes, Wi-Fi is fast becoming the favored remote data-access method, called hot spots, and an alternative access methodology for voice. Today most new cell phones come with a multimode capability inclusive of 802.11. This lets users piggyback voice access onto an internal corporate network, roam between cellular mobile networks and newer VoIP carrier networks, or access the Internet through a hot spot. Another example is Skype software, which lets a PDA or laptop invoke a voice call to another Skype user over the Internet, using 802.11 as the access media. This effectively lets users make free, distance-insensitive voice calls.

The third wireless technology in this revolution is IEEE 802.16. This standard has two forms: fixed and mobile. The fixed version is viewed as an alternative to carrier local loop wireline and cable access because it can deliver multi-megabit/sec broadband connections in a point-to-multipoint mode over a radius of more than 10 miles to more than 100 simultaneous users. WiMax is fast developing into the wireless equivalent of T-1, cable or DSL access. The technology is perfect for aggregation of, and carrier network access to, 802.11 hot spots. The mobile version is another issue. A recent announcement of an alliance between Alcatel and Intel to develop 802.16 mobile technology to compete with current GSM and future Universal Mobile Telecommunications System protocols indicates that cellular networks soon might be a relic of the 20th century. Currently, there is another wireless standard in this area called IEEE 802.20. Initially, IEEE 802.20 and 802.16 had different focuses, but have evolved with the introduction of the mobile version of 802.16 into direct competitors. Industry support seems to be shifting to 802.16 because of the availability of components and the advanced state of the standard.

The final technology fueling the wireless revolution is an alternative to fiber. In October, the FCC approved the use of the 71 to 76 GHz, 81 to 86 GHz and 92 to 95 GHz frequency bands. These bands will enable carrier-grade, point-to-point, two-way 2.48G bit/sec communications transport for more than 1 mile. The next generation of this technology will deliver 10G bit/sec at the same level of quality and distance. This new wireless technology has all the quality traits and cost points required for last-mile, high bandwidth fiber replacement.

Wireless transport in the 21st century will dominate the delivery of voice, video and data for the shortest distance between your PC and a printer, to 10G bit/sec building metropolitan-area access and all the broadband mobility points in between. The real "triple play" communications revolution will not be over wires, but through the air.

Dzubeck is president of Communications Network Architects, an industry analysis firm in Washington, D.C. He can be reached at fdzubeck@commnetarch.com.

NETWORLD+INTEROP LAS VEGAS

MAY 11TH – 13TH

LAS VEGAS CONVENTION CENTRE

BOOTH #1735 & 2235

HIGH-PERFORMANCE NETWORKING TAKES TO THE AIR.

Extend the power of your network with the most adaptive wireless solution from the leading high-performance networking company. Foundry's integrated wired and wireless network infrastructure solutions put you in control. Foundry's standards-based dual-band IronPoint™ 200 is a full-featured access point featuring strong security with dynamic WEP, WPA, TKIP, and AES data encryption, 802.1X authentication, and user access control. The IronPoint 200 can be tightly integrated with your wired infrastructure using wireless-enabled Foundry switches, which offer Power over Ethernet, Layer 3 roaming, plug-and-play installation, and advanced security features. Foundry's IronView® IronPoint-edition network management system provides centralized operations, security policy management, RF surveillance, and rich reporting capabilities. Foundry's wireless solution offers the performance and flexibility you need with integrated Layer 2/3/4 switching features unparalleled in the industry. Take to the air, and get the freedom of mobility today. Call Foundry at 1.888.TURBOLAN (1.888.887.2652) or visit www.foundrynetworks.com/flight

FOUNDRY NETWORKS

The Power of Performance™

Face-off

Is a unified WLAN approach better than an overlay?

Two industry insiders debate whether Wi-Fi should be deployed as an extension of the wired LAN.

Yes, by Vipin Jain

Before embracing a particular wireless LAN architecture, buyers should consider the burdens the WLAN will place on the enterprise network, including security and management needs. The best way to stay ahead of changes in enterprise networking is to adopt a unified solution that integrates the wireless and wired infrastructure at the network edge, where it can be effectively managed from one console.

Adopting this unified strategy allows you to upgrade your edge switches using software while buying incremental hardware upgrades as needed to deal with future scalability and new application requirements. Additional edge switches are easy to install incrementally. This unified approach to broadband provisioning — buying for now as well as preparing for the future — offers the most flexibility, simplicity and scalability.

By contrast, an overlay approach is shortsighted and inflexible. It locks customers into an inevitable and incessant upgrade cycle, resulting in multiple networks that are difficult to manage. These upgrades also lack complete security functions and necessary levels of reliability.

Many companies have delayed deployment of wireless networks because they're daunted by the prospect of securing and operating separate networks for wired and wireless access. In an overlay scheme, multiple products from multiple vendors become overwhelming. Each requires specific equipment, which accelerates capital and operational costs, to address management, intrusion-protection and security issues.

The unified architecture approach to an integrated wired and wireless network reduces capital and operational expenditure because it eliminates the need for costly deployment of core and edge products. For example, in a unified environment, access points deliver radio frequency functions while power, security, access control and policy management are done directly in the edge switch. Combined with centralized networking intelligence, this level of simplicity dramatically increases cost-effectiveness.

Another important aspect of overall WLAN integration is security. The compounding effect of new applications and services, new employees, new equipment and new kinds of devices can turn security protocols into a dizzying maze. With the unified architecture approach, companies can use existing standards and provide the same high standards for security, intrusion detection and prevention, virus quarantine, resiliency and quality of service to their wired and wireless infrastructure. With an overlay approach — because of its piecemeal nature — companies have to deploy redundant technology at the edge as well as in the core with overlay appliances, and manage disparate standards and protocols. This opens the network to more security risks.

To meet future requirements and to support diverse, networked devices on the network, a unified architecture is the way to go. It cuts total cost of ownership by eliminating security, deployment and operations challenges.

Jain is vice president and general manager, LAN Access, at Extreme Networks. He can be reached at vipin@extremenetworks.com.

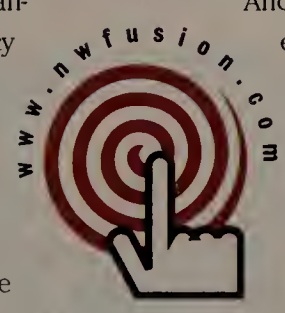
No, by Keerti Melkote

Wireless networks are completely different from their wired brethren and should be treated as such. Merely adding wireless as a feature to existing wired networks quickly turns into a security and management nightmare, for several reasons:

- Wireless networks are inherently insecure. Radio frequency waves penetrate walls and flow into parking lots. Locking the RF environment is essential to maintaining the privacy of the enterprise network. That's only the beginning. All integral components of a wireless network such as secure user authentication strong encryption, containing wireless intrusions and rogue transmissions, and stateful firewalling can't be simply bolted onto the corporate intranet.
- RF spectrum is shared and dynamic. Wi-Fi's unlicensed spectrum is free to anyone for any application. Other radio frequency sources, such as neighboring access points and cordless phones, can cause interference problems. Constant real-time monitoring and radio frequency spectrum management is required to combat this reality. Self-calibrating wireless LAN (WLAN) capabilities also are mandatory for operating a wireless network, including dynamic channel allocation and automatic power assignment, interference detection and mitigation, self-healing and load balancing. Moreover, sharing the air requires the use of new quality-of-service (QoS) mechanisms for prioritizing access to the medium along with methods that minimize jitter and maximize battery power for handheld devices. Wired networks don't know or care about any of these requirements. Trying to incrementally add them disrupts what already works.
- Wireless networks require mobility. An enterprise Wi-Fi network is like a cellular network in that roaming and seamless handoffs are an implicit expectation. Like a cellular network that uses the IP network for transport, so should the WLAN. An enterprise Wi-Fi user can roam across multiple LAN ports and multiple wired LAN switches in the network while staying connected to the network. Ultimately, wired networks must aggregate user ports and deliver wire-speed transport for TCP/IP traffic. But Wi-Fi networks need to process and forward traffic based on user identity, location and presence while delivering security, mobility, RF spectrum management and QoS for emerging wireless applications.

Anchoring the wireless network to a wired switch artificially limits your ability to evolve the two networks independently. As wireless access points proliferate throughout the enterprise, an integrated approach requires that wired edge switches be upgraded throughout the network. This can be expensive compared with an overlay architecture that aggregates wireless intelligence at a centralized point with thin access points deployed at the edge. Thin access points tunnel wireless traffic transparently over the wired LAN and are centrally controlled by dedicated wireless switches. This results in no logical or physical changes to the wired LAN and is more secure, less disruptive and more cost-effective than the unified access approach.

Melkote is co-founder and vice president of product marketing at Aruba Wireless Networks. He can be reached at melkote@arubanetworks.com.



More online!

Log on to Network World Fusion to voice your opinion. Face-off authors Vipin Jain and Keerti Melkote will add their thoughts to the discussion.

DocFinder: 1821

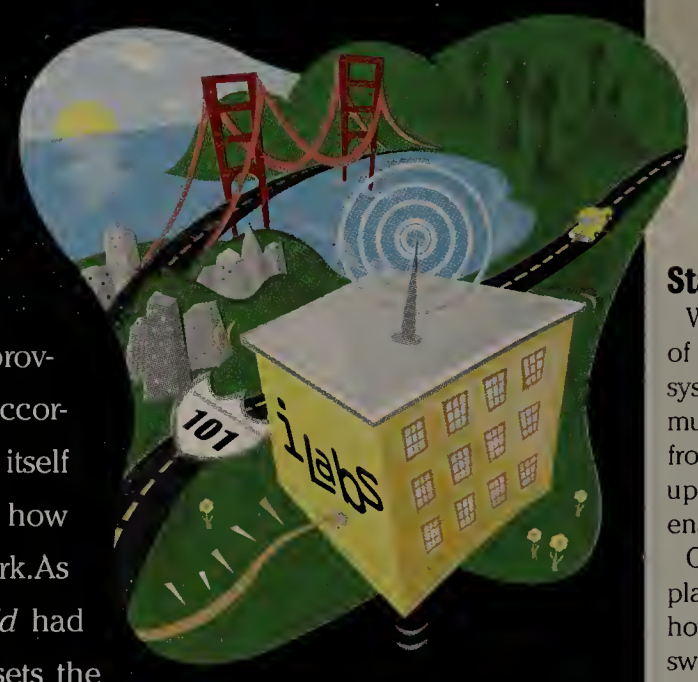
Solutions for the adaptive enterprise.

hp
invent

TESTERS DRILL DOWN ON SIP, 802.1X SECURITY AND MPLS

An exclusive preview of the cutting-edge interoperability testing that will be showcased this week at NetWorld+Interop.

InteropNet Labs
Las Vegas 2004



Early last month, in a drafty warehouse somewhere off Route 101 between San Francisco and San Jose, dozens of network engineers hammered away at hundreds of products tested as part of the 2004 NetWorld+Interop InteropNet Labs.

For more than a decade, iLabs has served as a neutral proving ground where vendors can test their products in accordance with emerging standards. The iLabs team prides itself on a long history of providing an honest assessment of how useful these technologies will or won't be in your network. As the media sponsor of InteropNet Labs, *Network World* had exclusive access to the pre-stage event that literally sets the stage for the testing demonstrations showcased on the trade-show floor this week in Las Vegas.

The three focal points of this year's iLabs endeavors are:

- Interoperability of VoIP products using Session Initiation Protocol (SIP).
- Secure wired and wireless LAN access based on the IETF's 802.1X standard.
- Multi-protocol Label Switching gear that supports various MPLS VPN technologies and new developments in IPv6/IPv4/MPLS integration.

We've placed Network World Lab Alliance partners Joel Snyder on the SIP team (see story, below) and Rodney Thayer on the 802.1X LAN access security team (see story, page 64) to provide a closer look at the state of those two standards. Additionally, *Network World* Managing Editor Jim Duffy interviewed three of the MPLS testers (see story, page 66).

JOEL SNYDER, NETWORK WORLD LAB ALLIANCE

SIP aces basic interop tests

We didn't just take a sip. We took a good long drink of SIP technology in this round of iLabs testing.

We gathered more than 50 devices from five SIP server vendors and 13 SIP endpoint vendors to prove that multivendor SIP telephony deployments are possible. Our results show that while basic SIP interoperability is outstanding, advanced features such as call forwarding and conferencing might not work so smoothly between all SIP devices.

Protocol simplicity is an argument in favor of SIP over the more complicated H.323 VoIP standard. This simplicity minimized interoperability problems and made device configuration easy. Compared with previous iLabs tests involving H.323, SIP let us connect more devices to more servers more quickly. With the exception of an older device an engineer brought from his own network, all SIP endpoints passed our basic call tests.

Starting from scratch

We defined our telephony environment in the context of a midsize company wanting to build a SIP-based VoIP system from the ground up. Designing a VoIP network is much like designing a LAN: You have to plan all aspects, from numbering of phones and IP addresses, to setting up services such as voice mail and call conferencing, to enabling voice encoders, to naming devices.

One of the first VoIP planning steps is setting up the dial plan (see "Dialing for VoIP dollars," page 60) that defines how long phone numbers are, how gateways to the public switched telephone network (PSTN) are addressed and how the internal network is divided between SIP servers.

In a traditional telephony environment, the dial plan is built into the PBX. In a SIP network, the dial plan has to be configured on all phones individually. If you don't program the dial plan into the phones, end users will either wait for the phone to "time out" when dialing or hit a terminator character (the pound sign is common) when they're done to get the phone to dial (like hitting "send" on a cell phone).

Because of the expanse of our SIP test bed, we had a fairly complex dialing plan and found that not every phone could support that. On our network, users could dial phone-to-phone with a four-digit extension. But to dial through to the PSTN, Interop's eNet or Free World Dialup SIP service, they'd use single-digit prefixes, such as "9," followed by a number on the other network. A number of SIP endpoints couldn't handle that much flexibility. With those phones, we put in a maximum number of digits — 19, to be exact — and use timeouts or terminators when dialing. It's hard to say whether this is an interoperability problem or just poor design.

With dialing plan in hand, we installed the five SIP proxy servers, open source Asterisk (from Digium) and SIP Express Router (SER, from iptel.org), and commercial products from Avaya, Cisco and Nortel. Each SIP server had to support a number of phones and be able to send calls to the other SIP servers. We took the 40-plus phones and assigned each to one of the SIP servers (see graphic, page 62) so that each phone registered with only one SIP server and that server was responsible for routing any SIP calls for that phone.

When we achieved 100% interoperability between SIP servers using direct dialing, we threw a monkey wrench into the works by adding an Enum dialing test. An international proposal on how to link the Internet VoIP and PSTN worlds together using DNS Enum currently is mired in political infighting in the U.S. However, the concept of

See SIP, page 60

HP Integrity servers are taking off, as are the companies using them.

Companies adopting HP Integrity servers, powered by industry-leading Intel® Itanium® 2 processors, are seeing remarkable gains in performance. The momentum is building. One after another, companies are choosing HP Integrity servers. Leading software and technology partners such as BEA, Microsoft®, Oracle, SAP and Siebel Systems have embraced the platform as an industry standard. And with the ability to manage a mixed environment of UNIX, Microsoft® Windows®, Linux and OpenVMS, HP Integrity servers are fast becoming the ultimate consolidation tool. Demand maximum performance, reliability and cost-efficiency now, on a platform that will carry you forward into the future. Demand performance that's real-world proven, and get it—with HP Integrity server solutions.

Choosing HP Integrity servers, choosing results.

AIRBUS UK:
Running HP-UX11i on HP Integrity servers, 20–30 wing design simulations that used to take weeks are now done overnight.

COMPUSA:
Going with 64-bit architecture using HP Integrity servers, they cut access time to inventory data by up to 85%.

FIAT AUTO:
Standardizing on 64-bit infrastructure using HP Integrity servers, they're integrating and enhancing sales and service as well as streamlining the buying process while lowering sales cost.

THE KOEHLER GROUP:
Moving to an environment composed of HP Integrity servers, they gained a 50% improvement in mission-critical performance.

intel inside ITANIUM 2

hp invent

To get the IDC white paper outlining the performance of HP Integrity servers with Intel Itanium 2 processors, go to hp.com/go/demandIntegrity6 or call 1-800-282-6672, option 5, mention code AQHG.

Enum can be applied at the enterprise level in a private DNS tree. For the SIP servers that supported Enum — Asterisk and SER — it worked well.

Once we had basic connectivity working, we dumped all the phones on the different SIP servers to test interoperability within each SIP server. We had a few problems getting the phones installed as the number of them stressed our team from an installation and a testing standpoint.

Most of the phones we tested were SIP "hard phones," generally managed using a Web-based interface. We installed phones from Avaya, Cisco, Grandstream Networks, ipDialog, Pingtel, Polycom, Pulver Innovations, Siemens and Snom Technology. We also tested soft phones from Xten on Windows and Mac OS X platforms, and FXS gateways (see "SIP terms," right) from AudioCodes, Cisco, D-Link Systems, MIP Telecom and Multi-Tech Systems.

When it came to simply calling from phone to phone through the same SIP proxy server, we achieved nearly 100% interoperability. Of the 230 test cases, only seven were not resolved by some reconfiguration in our testing, coming down to two very specific combinations of phone plus SIP proxy (ipDialog phone on SER SIP proxy and Polycom phone on Avaya SIP proxy). The most common problem we saw was phones that connected to each other, but didn't have audio reception.

This success doesn't mean that everything behaved perfectly. We ran into some problems, such as calls that wouldn't complete and phones that didn't ring, which disappeared when phones were rebooted or calls were redialed.

Our single-application VoIP network comprised a dedicated, 100M-byte switch port to each device. We discovered that the VoIP network was extraordinarily sensitive to small perturbations in topology. We were forced to make several adjustments to DNS and Dynamic Host Configuration Protocol services after discovering that many of the SIP phones do not have the same tolerances for different TCP/IP network designs. For example, our Cisco phones would occasionally fail to complete calls when DNS requests went through a router, but behaved when we added a non-routed path to the DNS server.

One very basic interoperability failure, however, was a complete surprise. We

See SIP, page 62

InteropNet Labs Las Vegas 2004

SIP terms

Session Initiation Protocol is a control protocol for multimedia sessions. Although most SIP software and hardware are designed for the simple case of VoIP telephony, SIP is actually a generic protocol that can be used to create multimedia conferences with voice, video and other datastreams (such as instant-messaging-type applications). SIP doesn't actually transfer any of the voice or video data. Instead, SIP is used to set up a session, and another protocol (Real-time Transport Protocol, in the telephony case) is used to send the voice.

Endpoints, also called **user agents**, are the phones of the SIP world. Anything that sits at the other end of a SIP session is considered an endpoint. For example, a voice mail system acts as an endpoint. The most common SIP endpoint is going to be a hard phone: a box that looks a lot like the phone on your desk, but with an Ethernet port instead of a two-wire analog phone line coming out the back. Hard phones run SIP software, have IP addresses and need a fairly hefty and complex configuration to survive. In addition to hard phones, two other important kinds of endpoints in SIP are analog telephone adapters (also called FXS gateways) and soft phones.

Soft phones are simply software versions of the SIP phone, typically designed to be installed on a PC, Macintosh or PDA. With a soft phone and an inexpensive headset, you can turn your $3,000 laptop into the SIP version of a $10 phone.

An **FXS gateway**, or analog telephone adapter (often written as analog telephone adapter), is a device that lets normal two-wire telephones be connected to a SIP network. FXS stands for "foreign exchange station" and is an old telephony acronym used to describe what most of us consider a plain old telephone service line: something with two wires to which you connect a telephone. The FXS gateway is essentially a box that has an Ethernet port on one side, a two-wire analog telephone jack on the other, and SIP running in between. FXS gateways, such as the Cisco ATA-186 or the Multi-Tech MVP210, have become very popular in residential VoIP systems because they let you hook your existing analog phones to the digital SIP network.

SIP servers are systems that help phones talk to each other (and other endpoints). Technically, there is no such thing as a SIP server. Because SIP is a decentralized protocol, the traditional PBX has no direct VoIP equivalent. Phones can and do talk directly to each other for call control and voice traffic, and functions such as directory services and call control can be highly distributed. This makes it difficult to know what to call a system that does provide PBX-like SIP services, because a server might have a combination of registration services, call redirection and call control functions. Where the exact function isn't important, the term "SIP server" has come into common use.

The two most common types of SIP servers are the **registration server** and the **proxy server**. A registration server receives and collates information about phones, helping to map from SIP addresses (such as an extension number or a SIP URL) out to IP addresses. The proxy server normally receives incoming and outgoing call requests on behalf of a phone. This lets the more sophisticated tasks, such as ringing multiple phones, dealing with DNS and Enum, or accounting, be pushed out to the proxy server, making the phone simpler, faster, easier to manage and less expensive. In many VoIP networks, the proxy server and registration server are the same system.

— Joel Snyder

Dialing for VoIP dollars

All telephony networks require a dial plan that describes what happens when you dial which numbers. In the U.S., for example, we participate in the North American Numbering Plan, which is why we put a "011" before international calls and "1" before an area code and phone number. These kinds of things are all specified in a dial plan.

When the iLabs engineers sat down to design our dial plan, we didn't realize that we'd almost come to blows over the details. But, like all human interface issues, how many digits you have to dial, and what they mean tend to elicit strong feelings.

One example of the problem came when we debated how people were going to leave the world of our little PBX and connect to the rest of the telephony universe. Half of the team wanted to use the traditional "dial 9 to get out" strategy, while the other half wanted to simply let you pick up a phone and start dialing.

There are pros and cons to each approach. For example, if you're in an area where you always have to dial the area code for any phone number anyway, a "9" access code is not needed. On the other hand, if you're transitioning from a legacy PBX (with a "dial 9" policy) to a SIP network, the transition might be easier if the dialing plan is the same — even if there's no need for the extra digit.

There's more to a dialing and numbering plan than that. In our test network, we didn't know how many SIP proxy servers we were going to end up with, so we used the first two digits of each of our four-digit extension numbers to route the call to a particular proxy server, reserving two digits for the phones. By routing calls based on the first few digits dialed, we didn't have to make every server know about every phone, just about every other server.

When you have to connect to a legacy PBX, especially during a transition period, the dialing plan also helps to minimize confusion.

The dial plan is programmed into the logic of every SIP proxy server in the network, and also is pushed out (to some extent) to each phone. Phones don't need to know about call routing, but they do need to know how long phone numbers are. This is because the phone decides when enough digits have been pressed and it's time to actually make the call, not the PBX, as in traditional telephony.

Phones without a properly configured dial plan either require a terminator (such as the pound symbol) or a timeout (such as waiting for 4 or 5 seconds) before they actually start calling. Some phones support a "plan-less" mode of operation where they try to make a call for every digit dialed, depending on the SIP proxy server to return different status codes, depending on whether the partial number is illegal or just too short. In a large deployment, the phone would download the dial plan as part of its configuration at boot time.

Designing the dial plan is an important part of any SIP deployment because changing it requires changing every SIP device in the network. Just as engineering a proper IP address and subnet plan is important in a TCP/IP network, getting the dial plan right the first time can save a lot of grief and problems later.

— Joel Snyder

ILLUSTRATION: STEPHEN SAUER

>> Leading the battle against network threats takes remarkably sophisticated weaponry. Only Juniper Networks can make your network impenetrable without sacrificing speed or reliability. Superior performance shouldn't be at the expense of security, but the essence of it. That's a powerful reason to Juniper *your* net. And now.

Juniper Networks is proud to transform security in networking through our addition of NetScreen Technologies: Deep Inspection Firewall | IPSec and SSL VPN | Intrusion Detection and Prevention | Antivirus | Central Management

hooked an Adtran channel bank — which takes a multiplexed phone line, such as a T-1, and breaks it out to its 24 individual lines for connection to traditional analog telephony devices — to a Digium T-1 card to provide some analog phone lines to connect to phones and to the PSTN. Unfortunately, the channel bank didn't mix well with the inexpensive analog speaker phones we purchased for the test lab. We managed to make two of the phones unusable before we realized what was happening.

Features cry foul

Simply making calls is only part of the picture for an enterprise VoIP deployment. We also were interested in features, such as call transfer, that would further stress the interoperability of SIP phones and our SIP proxy servers a little more.

Testing these features is easy, but deciding where the problem lies when they don't work is not. To help us in this analysis, we depended heavily on EtherPeek NX from WildPackets and the VoIP-centric ClearSight Analyzer from ClearSight Technology. We were particularly impressed at ClearSight's ability to record a VoIP call and play it back, a feature that helped us debug voice quality problems.

Because many features are built into the phone, rather than into the SIP proxy server, there's no one place on the network to look for feature support. Some features, such as call transfer, also suffer from a lack of standard nomenclature across vendors. For example, when some vendors mention call transfer, they mean "blind transfer," where the call is simply sent from one phone to the other. Others mean "consultative transfer," where the person doing the transferring speaks first and says what is happening. These are pretty simple in traditional telephony, but are radically different operations in the VoIP world.

Where the VoIP community hasn't reached agreement on strategies, we also found interoperability problems. For example, there are several options on how to send dual-tone multifrequency (DTMF) tones — the tones you hear while dialing the phone — over a VoIP network. You simply can send the DTMF tones in-band over the data path as tones, or you can use the RFC 2833 format to send a special payload that tells the other end that a DTMF tone is being generated. We used the RFC 2833 format, which is more robust, and found two curious combinations of phone and SIP proxy combinations — the WiSIP phone on Asterisk SIP proxy and the Siemens phone on Avaya SIP proxy — where it didn't work properly. These were phones that worked correctly on other SIP proxy servers, and SIP proxy servers that worked correctly with other phones, so we could not determine which end was the source of the problem.

In testing our other enterprise features, including call hold and retrieve, call transfer, multi-line calling and receiving, call forwarding and conferencing, we ran into the same kind of variability: Many things worked, but we had a much lower success rate than with simple calling.

In some cases, we could see the culprit pretty easily. For example, no call transfer across SIP proxy servers involving the Asterisk SIP proxy worked, pointing the finger pretty strongly at Asterisk. We also saw repeated failures in call transfers involving Siemens phones and multiple SIP proxy servers.

PSTN and firewalls

One of our goals was to show how an enterprise SIP network could be connected to the PSTN directly over the Internet using a telephony service provider. Free World Dialup, a no-cost SIP network that has connections to several PSTN service providers, built a link to the iLabs SIP network. Voicepulse, Vonage and Packet8, three other commercial telephony service providers using SIP, declined.

The Free World Dialup link showed another SIP interoperability issue in bold letters: security. We initially protected our SIP test bed using a Check Point firewall, its latest and greatest version of Firewall-1, which includes a SIP proxy as part of the basic unit. Using a fairly general model, the Firewall-1 SIP gateway knows about SIP proxy servers and SIP signaling and can use information on a proxy-to-proxy connection to let two phones talk directly to each other.

Unfortunately, a worldwide network like Free World Dialup isn't constrained very well because any system on the Internet can participate. That vagueness meant that Firewall-1's advanced SIP capabilities weren't much use to us. Even if you weren't connecting one enterprise SIP network to another company, you'd run into similar problems if you let end users take soft phones or hard phones on the road with them. A stronger authentication measure, such as an IPSec VPN tunnel, would probably be necessary.

We also integrated an Intertex IX66 SIP firewall in to our test network between a Polycom phone and an Asterisk SIP proxy server without any changes in interoperability or feature support.

Doing your own testing

We pinpointed several areas where additional SIP testing is needed. One is voice quality. Some SIP devices, such as the AudioCodes FXS gateway, were tuned to work best across a low-latency network like a Fast Ethernet LAN. When we used the AudioCodes gateway, there was no noticeable latency on VoIP calls. At the other end of the spectrum were the soft phones from Xten, the Windows and Mac versions of X-Pro. With Xten, the combination of the latency introduced by our test laptops and tuning aimed at calls over the wide-area Internet, introduced a very distinct delay into our calls.

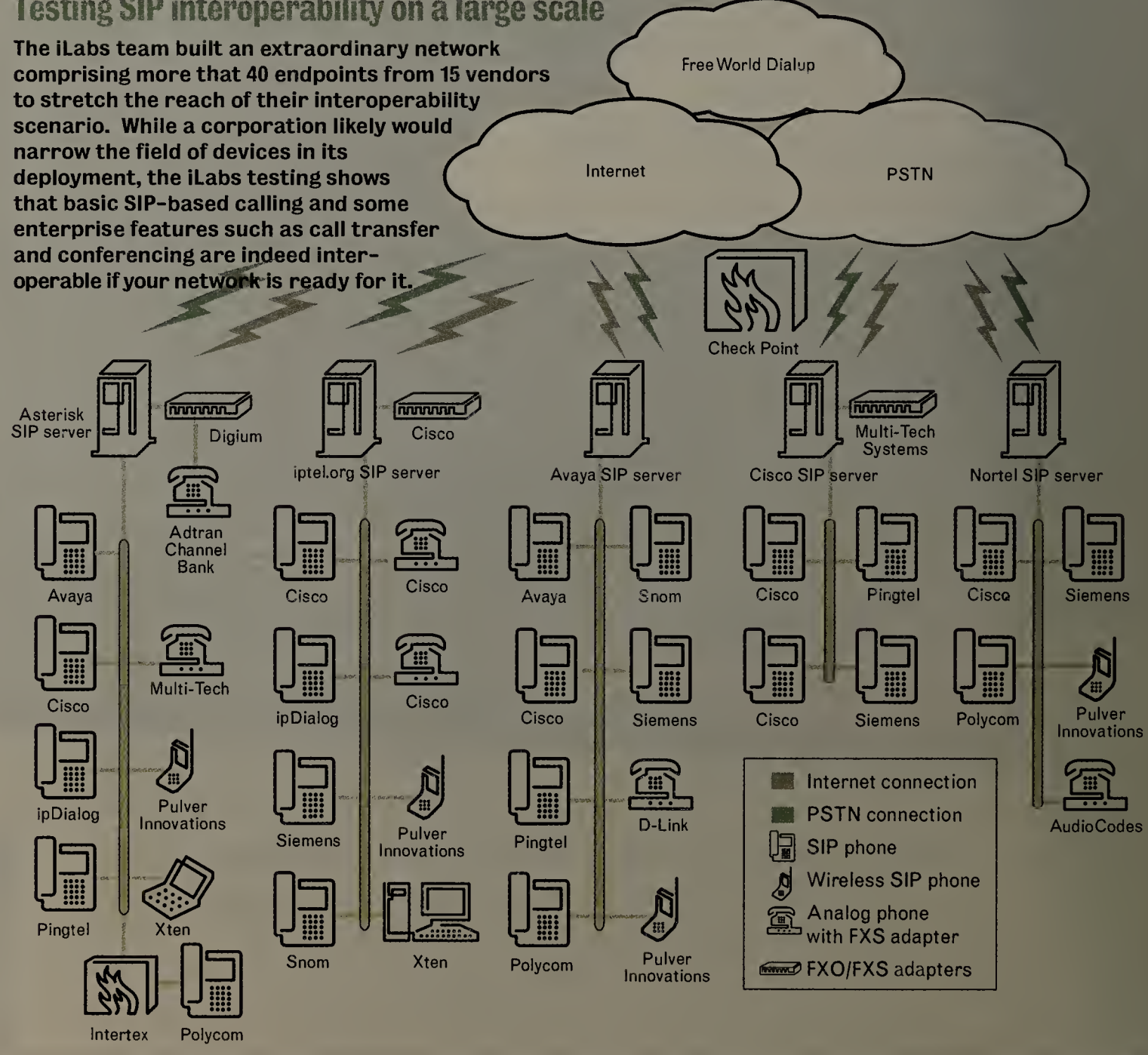
Most SIP hard and soft phones and gateways let you tune the audio jitter to meet the performance characteristics of your network. In testing for an enterprise deployment, human factors such as jitter management and appropriate delay are important considerations.

Snyder is a senior partner at Opus One in Tucson, Ariz. He can be reached at joel.snyder@opus1.com.

InteropNet Labs Las Vegas 2004

Testing SIP interoperability on a large scale

The iLabs team built an extraordinary network comprising more that 40 endpoints from 15 vendors to stretch the reach of their interoperability scenario. While a corporation likely would narrow the field of devices in its deployment, the iLabs testing shows that basic SIP-based calling and some enterprise features such as call transfer and conferencing are indeed interoperable if your network is ready for it.



Free Space Optics

FSO BREAKTHROUGH:

CANOBEAM COMBINES HIGH-TECH WITH LOW PRICES.

- Auto Tracking Feature in all models
- High speed economical transmission up to 1.25Gbps
- Provides High-quality, reliable wireless communications up to 2km with Auto Tracking
- Requires no radio frequency allocations, permits or licenses
- Highly secure data links
- Protocol independent, like fiber optic cable
- Installation and operating cost are much lower than installing fiber optic cable

NEW CANOBEAM DT-100 SERIES

DT-110

- Economical FSO for data transmission from 20m to 500m
- Wide range of data speeds from 25Mbps to 156Mbps
- Auto Tracking Feature
- DT-MNG100, Management Board built-in

DT-120

- Provides high-quality, reliable wireless communications from 100m to 2km
- Wide range of data speeds from 25Mbps to 156Mbps
- Auto Tracking Feature
- DT-MNG100; Management Board built-in

DT-130

- State-of-art data transmission at 1.25Gbps for Gigabit Ethernet network
- Transmission distance from 100m to 1000m
- 3R Function (Re-shaping, Re-timing, Re-generating)
- Auto Tracking Feature
- DT-MNG100, Management Board built-in

Find out more at canobeam.com

1-800-321-4388 (Canada: 905-795-2012)

Canon KNOW HOW®

InteropNet Labs Las Vegas 2004

RODNEY THAYER, NETWORK WORLD LAB ALLIANCE

Vendors hit the 802.1X mark for access, but security holes remain

While previous iLabs security-based testing focused strictly on how the IEEE 802.1X authentication standard helped lock down wireless LAN connections, this year's testing also spanned the wired world.

The protocol has matured and vendors have expended a great deal of effort into building products — which in this test include client-side software, wireless access points, wired switches and authentication servers — around this standard. However, this year's testing demonstrates that some offerings based on 802.1X still have a ways to go before we could recommend them as enterprise-class security products.

The products do implement 802.1X, but in most cases it's going to take a very skilled network technician to configure 802.1X products across any large deployment. It also seems that attention to implementing 802.1X has distracted vendors for hitting on other security standards such as in digital certificate processing, management interface security and event logging. These non-802.1X issues could affect 802.1X deployment overall.

Where to begin?

In the 802.1X world, a client is referred to as a supplicant. The device it connects to is an authenticator. Behind the authenticator is an authentication server that maintains a client/server relationship with the authenticator.

We used supplicant software running on PCs and Macintosh machines connecting to wireless access points or wired switches, with RADIUS servers providing authentication. The supplicants tested were from Cisco, Funk Software, Meetinghouse Communications, Microsoft and the open source implementation Open1x. Wireless gear vendors represented were Broadcom, Cisco, Extreme Networks, Proxim, Symbol Technologies and Trapeze Networks. Participating wired switch vendors included Cisco, Extreme and HP. Stepping up with 802.1X-compliant RADIUS implementations were Cisco, Infoblox, Funk, Meetinghouse, Microsoft, Radiator, Roving Planet and open source FreeRADIUS.

In last year's testing, we examined the various protocol options for authentication including Protected Extensible Authentication Protocol (PEAP) and Tunneled Transport Layer Security (TTLS), which use server certificates, and TLS, which uses client and server certificates (see www.nwfusion.com, DocFinder: 1831).

This year we focused on testing typical combinations of the three components (supplicant, authenticator and authentication server) to determine if the various components could authenticate correctly, connect to the network and display a Web page running on a test server.

We concluded that the basic interoperability battles were over. Vendors now are shipping 802.1X-capable devices, in both the wireless and wired cases. Most implementations were able to simply plug in and interoperate. There were certainly some bugs uncovered, such as problems with digital certificates, and problems connecting certain authenticators (switches) to some RADIUS servers, but no more than you'd find in any other new set of products that were thrown together.

Tell me again why I would care now?

We've been reporting on 802.1X as an emerging security technology for three years. But we're arguing that network professionals should pay attention now because:

- Wireless access control. With 802.1X in its current state, we finally are seeing the standards process offer a set of technically sound, secure access control mechanisms. This will continue to improve the options available to control and secure wireless (and wired) networks.
- Strong cryptography standards. 802.1X is part of the IEEE's ongoing activities to make sure that networks can be secured. As 802.11i — which specifies a safer keying mechanism with Temporal Key Integrity Protocol (TKIP) to replace Wired Equivalent Privacy (WEP), and use of Advanced Encryption Standard (AES) for encryption — becomes available, we will finally be able to have authenticated networks that use generally accepted strong cryptographic algorithms.
- Fine grained LAN access control. The deployment of 802.1X will lay the groundwork for future security mechanisms — like being able to stop denial-of-service attacks by blocking network access, or limiting network access to properly scanned workstations — to control network access on a user-by-user and port-by-port basis. This will mean that in the near future you will be able to better manage network repairs if you have virus or worm outbreaks and have to shut off selected sections of your network.

That said, we've pinpointed several issues that can complicate the use of 802.1X, including ease of use, end-user mobility and component compatibility within the client machine.

Ease of use issues arising around 802.1X implementations exhibit the same class of problems we've encountered with technologies such as IPSec in the past. Adding 802.1X support to your network means you have a new set of complex user interface screens with user-unfriendly terms such as TKIP and TTLS. Few, if any, supplicant vendors have made the user interface easy.

> "With 802.1x in its current state, we are finally seeing the standards process offer a set of technically sound, secure access control mechanism."

Microsoft's supplicant uses multiple windows buried behind the "Network Connections" control panel to configure 802.1X. Cisco's supplicant uses its own multi-screen user interface and then still requires you to configure the Microsoft supplicant on top of it. Additionally, most of the supplicants don't support diagnostic logging, making troubleshooting difficult. Together, these things can mean high deployment costs.

Mobile users of laptop computers or wireless handheld devices will want to travel between 802.1X domains. However, you have to be careful to configure the 802.1X supplicant software to allow this. Some implementations disable by default those portions of the Microsoft driver components so that you can no longer access an open wireless access point like you find at many Wi-Fi hot spots. This rigidity won't work if you have users who take their notebook computers from the office where they use a 802.1X-enabled wireless access point to coffee shops or other environments that typically don't use 802.1x. In this example, those users would be denied access the Internet.

The 802.1X supplicant introduces yet another link-layer protocol processing component into client machines. This is an area where the technology is complex and delicate and errors occur when technologies are mixed. Combining 802.1X supplicants, virus scanning, personal firewalls, and VPN client software into one end user machine can be a daunting debugging task.

What is missing?

All supplicants and all authentication

See Security, page 66

Is it time to go shopping for 802.1X?

There are some 802.1X products that might be ready for your enterprise deployment. To help ascertain which products they might be, Network World Lab Alliance and iLabs team member Rodney Thayer proposes the following questions be asked of the vendors you're considering at this juncture.

1. What is the per-seat cost of deploying supplicant software? Will I need to reload the operating system to get the supplicant to work?
2. How does the 802.1X implementation support roaming users?
3. Are the new features in the client and the access points implemented securely beyond the 802.1X specifications? For example, do they properly process certificates?
4. Are the new features in the access points implemented in a resilient fashion? Can you specify at least two RADIUS servers when you configure 802.1X?
5. Are there secure mechanisms available to manage these access security devices? For example, can you use "https" to access the Web interface on the wireless access point?
6. Are the access points and RADIUS servers generating logs? Can you configure these to send their logs to an external log server or SEM? If someone were to attempt to gain access with 802.1X in place, would there be a record? If someone fails to log on over 802.1X, does that logon failure generate an event?

ILLUSTRATION: STEPHEN SAUER

A totally integrated network vision solution. At the speed of sight.

YOUR EXISTING TOOLS

PACKET CAPTURE

STATISTICAL ANALYSIS

ACTIVE DISCOVERY

NETWORKSUPERVISION™

Our new OptiView Network Analysis Solution integrates packet capture, statistical analysis and network discovery so you can see your entire enterprise in one amazing view, fast. No need to open multiple applications. It's all right there before your eyes, on one console. It even integrates your tools from other vendors into a comprehensive solution of portable and distributed software and hardware that produces unprecedented network vision. Tough to install and use? Nope. Flexible and scalable? Totally. Buy only the components you need now and add more analysis power as your network grows. To see how your network is performing at warp speed, you really ought to check this out. **It's Network SuperVision at its finest. And fastest.**

Seeing is believing.
Go to www.flukenetworks.com/optiviewsolutions to see our new demo now.

FLUKE networks

servers that implement 802.1X are part of the network infrastructure, use cryptography and play a role in the overall authentication scheme. Therefore, there are generally accepted security considerations that these products should address. As part of the infrastructure, they should have features that implement resiliency, such as the ability for an access point to use alternative RADIUS servers in case the primary server fails This sort of resiliency is missing in some of the products. Because the RADIUS server is a critical part of the authentication mechanism, a failure there will stop access.

All RADIUS servers implementing 802.1X must have a server certificate. This means they have to implement the same level of security for storing cryptographic keys as other devices, such as Secure Sockets Layer (SSL)-enabled Web servers. Many vendors don't do this. Instead, they simply store the RSA Private Key, used in the SSL protocol, in an unencrypted file on the local hard disk. HP's switches, for example, do not store the private key in an encrypted fashion. Lax processing of the certificates means that an attacker could obtain a client 802.1X certificate, install it in a RADIUS server and masquerade as a legitimate server, thus tapping network traffic.

Like any other network infrastructure devices, wireless access points, switches and RADIUS servers should have securable management interfaces. This usually means the use of Secure Shell (SSH), if they have a console interface, or SSL (Secure-HTTP) if they have a Web interface. Cisco's access points do not do this — you can only manage them with an unencrypted connection to their Web interface. Neither does Meetinghouse. Infoblox gets partial credit — it uses SSL for its Web user interface but it only supports self-signed certificates. This means that an attacker who can gain access to the network used for device management potentially could sniff passwords. Even with a self-signed certificate, a man-in-the-middle attack still could be used to gain management access. Other vendors, such as Trapeze and Extreme, provide SSH and SSL management interfaces.

Finally, there should be a reasonable mechanism for these devices to share their event logs with a centralized security event management system so that the network managers can monitor attempted attacks or intrusions and create security audit trails. Neither Cisco nor Funk offer external logging from their RADIUS servers. Other implementations, such as Infoblox, Microsoft and Roving Planet, provide integration with an external logging facility.

Where is 802.1X going?

The standards still are moving. Just last month, Cisco proposed, and then unilaterally deployed, yet another authentication mechanism called Extended Authentication Protocol — Flexible Authentication via Secure Tunneling (EAP-FAST). EAP-FAST addresses Cisco's concern that users don't want to use certificates and would prefer to use passwords for authentication. Cisco has asked the IETF to accept EAP-FAST as an Informational (not a standard) RFC. It applies to the wireless and wired environments.

Another area to be addressed is the consistent use of 802.1X in the wired case. If you have made the policy decision that access to your wired network should be controlled, you need to be consistent about that or you will introduce security holes. The only 802.1X-capable supplicants shown in the iLabs demonstration are workstations. Even the wireless access points, which are themselves clients if you think about the cable coming out of the back and going into a switch, should be capable of using 802.1X as a supplicant.

A network deployment with 90 workstations all using 802.1X authentication doesn't protect the LAN if the printer and the UPS aren't also using it or aren't otherwise protected. If your security policy is such that all network access must be authenticated, you don't want to leave unlocked doors, whereby an attacker can get on the network simply by unplugging a printer and plugging in a computer to launch an attack.

All vendors of network-enabled devices should offer 802.1X if this is going to be deployable in a secure consistent manner. This same concern also applies as more specialized, network enabled handheld devices go wireless.

Thayer is a security researcher at Canola & Jones in Mountain View, Calif. He can be reached at rodney@canola-jones.com.

Q&A

Team mixes MPLS and IPv6 for enterprising results

The iLabs Advanced Internetworking Initiative team in collaboration with Isocore Internetworking Lab, this week will deploy a live, Multi-protocol Label Switching network to examine various MPLS VPN technologies and some of the latest developments in IPv6/IPv4/MPLS integration. All team members — Hege Trovsik, Rajiv Papneja and Jim Martin — took some time from their busy pre-show testing efforts last month to discuss their project with Network World *Managing Editor Jim Duffy. An unabridged version of the interview can be found at www.nwfusion.com, DocFinder: 1923.*

What are the overall/overriding objectives of your tests?

Papneja: The overall objective is to establish the availability of advanced enterprise applications across a capable, interoperable MPLS-based core. This year's demonstration is unique as it shows the readiness of the MPLS capability to support IPv6 customers without causing MPLS to be extended further, or the need to replace the IPv4-capable core routers in the existing service provider infrastructure. Also, this enables enterprise customers to move to IPv6 supported devices and still be transparently connected to same IPv4 infrastructure.

Are you testing MPLS' edge service capabilities? Or core transport capabilities? Or both?

Papneja: The focus will be primarily on the edge services and applications. The demonstration will include cases showing how various MPLS technologies can benefit the enterprise customers, and these customers can deploy their own services without much overhead. For example, the demonstration will be showing different types of MPLS VPNs [Layer 2/Layer 3], IPv6 over MPLS and Multicast over MPLS. In addition, certain core features, such as Fast Reroute across a [quality-of-service]-aware and a traffic-engineered core, will be examined.

Attendees will be able to experience edge services such as Layer 2 point-to-point and point-to-multipoint VPNs [including virtual private LAN service], Layer 3 VPNs based on IETF RFC 2547bis, Fast Reroute capable Label Switched Paths using [Resource Reservation Protocol-Traffic Engineering] Extensions, Multicast over MPLS and IPv6 tunneling over MPLS.

Martin: Our work with IP Multicast in some ways builds on the MPLS core and in others is completely orthogonal to it. The MPLS-related portion involves attempting to deploy IP Multicast over [Border Gateway Protocol]/VPNs — the [IETF] "Rosen draft" — which allows private multicast domains to transit a MPLS-enabled core, and preserve most, if not all, of the key advantages of multicast, like non-replication of streams over a given link.

We will contrast this with providing private Layer 2 VPNs and running existing multicast protocols directly on those paths, which inherently can lead to replication. This investigation is crucial as more enterprises use multicast as part of their business and need to interconnect far-flung sites.

During hot stage testing, we were able to get a single vendor's implementation to work at the provider edge, over a multi-vendor core. At the show, we intend to bring additional implementations into the mix at the edge and see how they interact.

This is likely to be quite interesting, as the Rosen draft has one of the common pitfalls of modern standards: It specifies three possible sets of handling rules, with two different encapsulations. Thus with six different "draft-compliant" scenarios, interoperability is far from certain.

How many vendors are involved? How many platforms — label edge routers (LER), label switch routers (LSR) — connected via what speed links?

Trovsik: We have 24 participating vendors and 10 supporting vendors. About 15 are router vendors, and three are test equipment vendors that will also act as LERs and do IPv6 and multicast. We will have about four core routers and 25 edge devices, although some of these will be doing IPv6 and multicast and not MPLS. We also have vendors of traffic analyzers, traffic policers and path optimizer technology participating.

What services — TDM, ATM, IP, frame, Ethernet, video, others — are you running across the MPLS network? How is each service benefiting — or not — from MPLS?

Papneja: For Layer-2-specific VPNs, based on the hardware availability, any-to-any connectivity will be demonstrated. For example, at one site, the attachment circuit could be Ethernet, port-based, and the remote end could be virtualized Ethernet ports or virtual LANs. Other types of attachment circuits that will be carried across MPLS transport include ATM [virtual path identifier/virtual circuit identifier] and frame relay [data link circuit identifier]. With a network consisting of this many vendors and different routers, it was necessary to choose a few commonly used interface types as the preferred. Gigabit Ethernet and OC-12/OC-48 are the technologies we chose for the core.

IronPort helps financial services giant KeyCorp put spam in its place

There's no putting a pretty face on it: KeyCorp was drowning in spam.

One of the world's largest bank-based financial services organizations, with more than 20,000 employees in 12 states, the company had two quad-processor Windows servers handling its email, with two more as backups. But even that wasn't enough to keep up with the volume of spam the company was receiving, says Mark Fitzgerald, senior technology specialist for Workplace Automation Technology, the KeyCorp IT unit charged with maintaining email systems and other collaborative applications.

> ***"In the first month we implemented IronPort, we went from blocking about 36% of spam to blocking more than 97%."***
>
> **Mark Fitzgerald,**
> Senior technology specialist, Workplace Automation Technology, KeyCorp

"The CPUs were pegged at 100% half the time," Fitzgerald says, with spam accounting for about 70% of all incoming mail volume.

It wasn't that Fitzgerald and his team were ignoring the spam problem. To the contrary, they used a commercial anti-spam product and augmented it with at least five real-time blackhole lists (RBLs), which are intended to identify mail from known sources of spam. The company would stop mail only if it showed up on three of the five RBLs. "Because we are so sensitive to false-positives, we were forced to let a lot of spam in," Fitzgerald says.

In February, the company put a stop to its spam woes by installing the IronPort C60, an email appliance that protects against spam, viruses and other email-borne security threats while also serving as a high-performance mail gateway and content policy enforcement engine.

To solve its immediate spam problem, KeyCorp was most interested in IronPort's Reputation Filters™ technology and SenderBase™ reputation database (see story, this page). Together, they enable the IronPort C60 to assess the reputation of email senders, assigning each a numeric score. Scores range from -10 for known spammers to +10 for mail that is known to be legitimate.

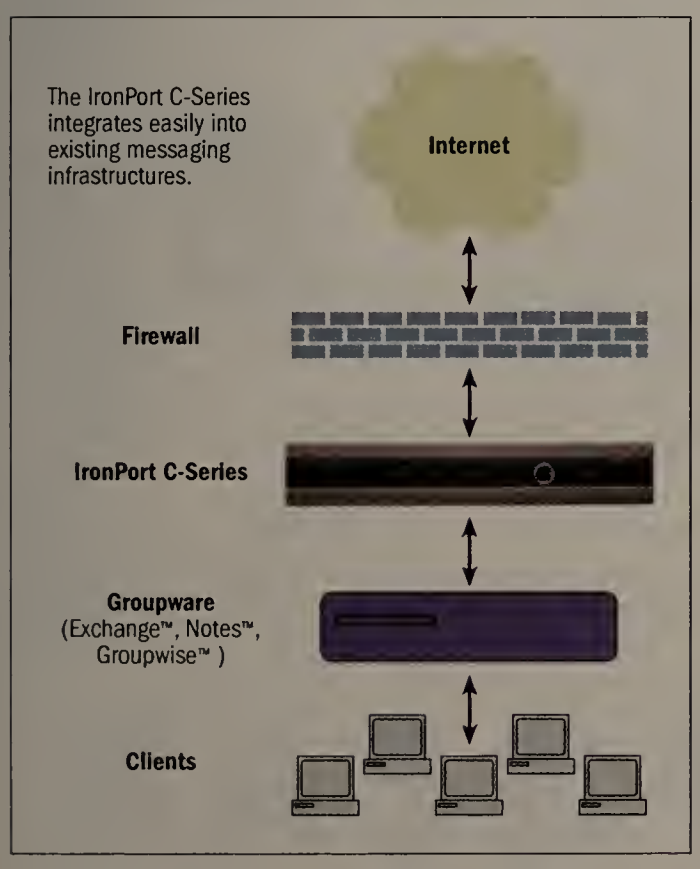
With the reputation score in hand, KeyCorp can then apply policies that intelligently dictate how mail should be handled. KeyCorp outright blocks any mail with a score between -6 and -10 and throttles mail rated from -2 to -6. Throttling can take different forms, including limiting the number of recipients allowed per hour, the size of the email messages, the number of connections allowed from a single IP address and the number of recipients allowed per message. If a domain with a negative reputation score tried to send 3,000 messages at once, for example, the IronPort C60 would only accept 20 per hour from that particular domain and reject the rest.

Rating incoming mail in this manner makes the IronPort C60's integrated Brightmail spam filter more effective. Messages with a poor reputation score can be dropped outright, while those with a good score can simply bypass the filter. Brightmail is left to examine only those messages deemed suspicious, which greatly reduces its load.

Today, KeyCorp's spam problems are a memory. "In the first month we implemented IronPort, we went from blocking about 36% of spam to more than 97%," Fitzgerald says. In one three-week period in April, the IronPort C60 looked at more than 4.5 million messages. Of those, fewer than 1.5 million – or roughly 30% – were sent through to a recipient; the rest were discarded as spam.

Getting rid of all that spam adds up to a significant return on investment from productivity savings alone. "We've got about 20,000 email users. If each one only spent five minutes in the morning determining what was spam and deleting it, that's a huge productivity gain right there," Fitzgerald says. Today, even on a Monday morning, users may get only two or three spam emails. "At first, people were calling us and asking if there was something wrong with the mail system. They were used to receiving so much junk mail, they were concerned when it just stopped."

Additionally, the IronPort C60 now processes the bulk of KeyCorp's email, such that utilization on the company's mail servers is no longer an issue. "On the IronPort box, I rarely see disk I/O up over 15%, even when we're getting hammered by a dictionary attack," he says.



SMTPi: A Foundation for Intelligent Email Handling

The IronPort Systems family of messaging gateway appliances brings security and trust to email by implementing the company's SMTPi architecture.

SMTPi adds a crucial "identity" element to the Simple Mail Transfer Protocol (SMTP), along with reputation and policy components. SMTPi first seeks to establish the identity of an email sender by verifying the IP address of the sending message transfer agent (MTA), which is far more difficult to forge than the simple return address. Going forward, SMTPi will incorporate additional identity authentication, including emerging systems from Microsoft, Yahoo! and others that allow companies to determine which mail servers are allowed to send email using a particular domain name. Ultimately, SMTPi will also support "universal" identity systems that use digital certificates to achieve a high level of accuracy in identifying email senders, even down to the individual level.

Once an email sender has been accurately identified, the next step is to assess his email history or reputation using IronPort's SenderBase, which acts like a credit reporting system for email senders. SenderBase (www.senderbase.org) monitors various factors to assess the reputation of a sender, including global sending volume, complaint levels, whether a sender's DNS resolves properly and accepts return mail, blacklist information and other parameters. SenderBase renders a statistical score, the SenderBase Reputation Score, which provides an assessment of the email sender's reliability.

The SenderBase Reputation Score enables email administrators to create policies for intelligently handling incoming mail. When combined with the threat prevention, content scanning, Brightmail-based spam detection and Sophos antivirus capabilities integrated with the high-performance IronPort Messaging Gateway appliances, SMTPi provides powerful mail handling capabilities.

Learn more about SMTPi and IronPort appliances

Download the white paper, "SMTPi: An Email Security Architecture," as well as data sheets on IronPort's family of Messaging Gateway Appliances.

Visit: www.ironport.com/future

IRONPORT™
Powerful. Reliable. Secure.

The easiest way to move up to managed switching is also the most affordable.

FSM7326P
Layer 3 Power-over-Ethernet Managed Switch

NETGEAR has the proof.

Managed Layer 3 Gigabit Switches


GSM7324 24-port


GSM7312 12-port

Managed Layer 2 Gigabit Switches


GSM712 12-port


GSM712F 12-port

Managed Stackable 10/100 Mbps Switch


FSM750S 48-port

Budget proof.
Why spend nearly $100 a port for one of our competitor's switching solutions when you can own a NETGEAR® FSM7326P 24+2 Layer 3 Power-over-Ethernet managed switch for just $46 a port? Or pay just $118 a port for the NETGEAR GSM7312 12-port Layer 3 Gigabit switch where others are priced at $235 a port, a whopping 50% savings over competitive solutions.

Hassle proof.
With the FSM7326P, you'll get a fast switch with Gigabit speeds, VLAN and subnet segmentation, advanced bandwidth management and a migration path to VoIP and wireless networking. You'll get a switch that's hassle proof, ready to work out of the box and easy to use. Standards-based, NETGEAR managed switches are also future proof, able to integrate seamlessly at every level, so you can easily grow current networks and accommodate new ones.

Bullet proof.
Since 1996, the reliability and flexibility of NETGEAR switches have enabled higher performance and dependability in networks across the globe. Whether you're planning for rapid expansion or need to implement fast changes to meet unexpected demands, NETGEAR offers a wide choice of switches from unmanaged Fast Ethernet up to the latest Layer 3 Gigabit solutions.

Proof positive NETGEAR is the choice for you.

More proof—a FREE Palm® V.
Get a Palm V with the purchase of any of the NETGEAR managed switches listed on the left, including FSM7326P, GSM7312, GSM7324, GSM712, GSM712F and FSM750S. This offer ends June 30, 2004. Plus, you can register for a FREE white paper on managed switching.

Go to **http://www.netgear.com/go/euadmswitch**.

To learn more about NETGEAR's entire range of business-class switch, wireless and security networking products, call your local reseller or visit www.netgear.com/where_to_buy.html to find a location near you.

NETGEAR®

Everybody's connecting.™

VoIP breaks down the walls of the call center

IP-based systems allow companies to route calls to home workers and satellite offices.

■ BY LORI BOCKLUND

BAXTER CREDIT UNION TOOK A bold approach to upgrading its call center. In late 2002 it merged voice and data on a single network and deployed an IP-based contact center platform from Interactive Intelligence.

The new system has delivered on its promise to help the company grow its business and expand its call centers easily and cost effectively. BCU has about 60 people in the main call center in the Chicago area, and rolling out the new system to 15 remote service centers has been smooth — each new site is treated as an add-on to the existing IP network.

BCU adds the remote staff to call center queues when needed and can retain key employees by letting them work from home. BCU uses one application to manage all media for routing and reporting across agent locations.

The Texas Association of School Boards (TASB) is taking a more phased approach. TASB recently purchased a Siemens platform that is "IP-ready" — it can migrate to VoIP as needed. Under TASB's long-term plan, remote and mobile users will be on IP in 2005, and they expect to IP-enable the product and service center that supports educators, administrators, school boards and the public by 2006.

TASB opted not to implement pure VoIP initially because there was no compelling business reason to switch and because there were too many hurdles, including preparing the network with switch

See Call center, page 71

Casestudy

Company:	Finish Line
Location:	Indianapolis
Business:	Retail athletic shoes and apparel.
Strategy:	Deployed 50 VoIP call center seats with SIP phones last July; 300 enterprise seats in October.
Benefits:	Lower IT costs, richer applications.

Robert Gray, director of telecommunications at Finish Line, plans to add multimedia apps to his IP-based call center.

	AT&T	Sprint
More seamless accessibility options.	☐	X
A better security option.	☐	X

More IP data options from Sprint.

Sprint has more IP data options to meet your company's needs than AT&T.

- Sprint IP data services provide seamless access to your corporate data, enabling you to connect your headquarters to branch offices, home offices and mobile employees.
- The Sprint Peerless IP network is more secure since it has no connection to the public Internet.

Get the facts at sprint.com/facts or call 866-700-0029 for a Business Representative.

Sprint®

One Sprint. Many Solutions.℠

Voice/Data | PCS Wireless | Internet Services | E-Business Solutions | Managed Services

Call center
continued from page 69

and router upgrades, replacing all the desktop phones and upgrading its adjunct systems such as voice mail.

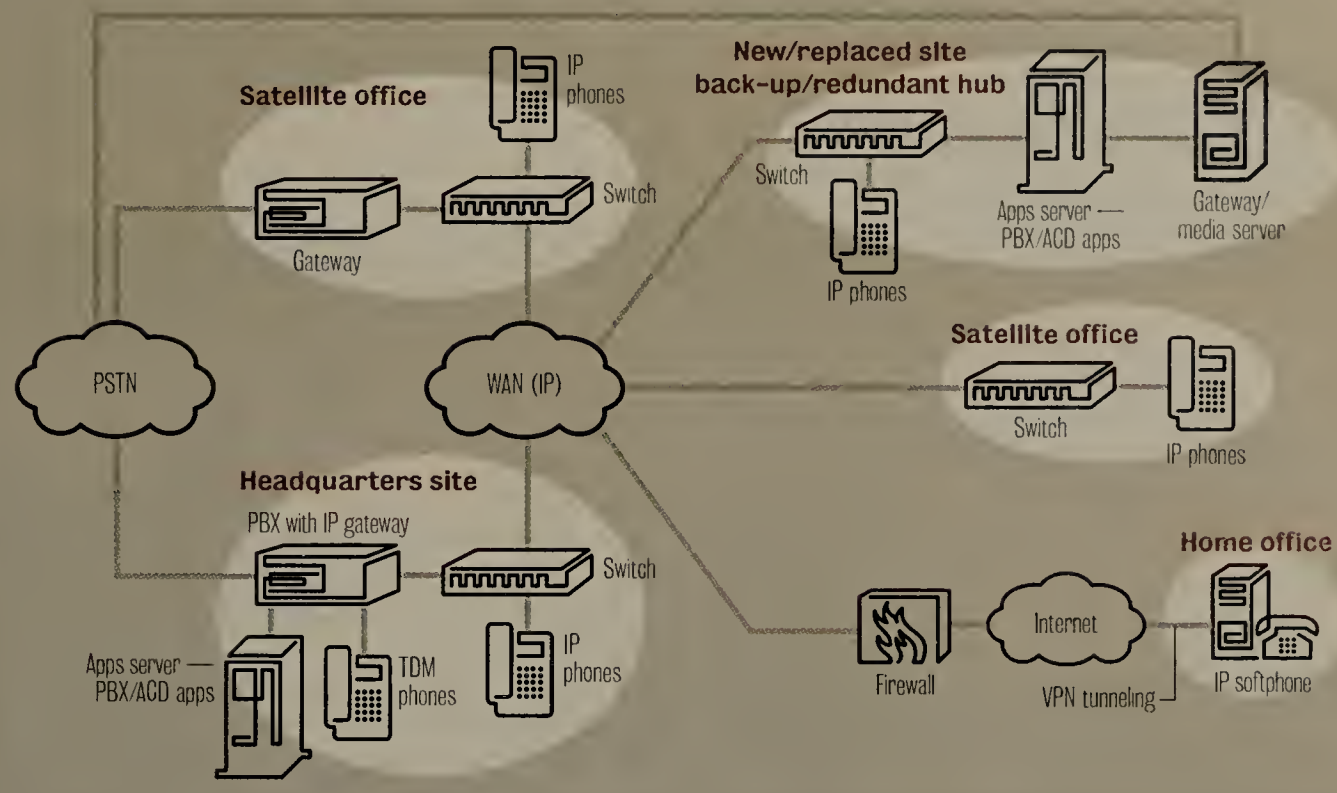
But TASB is now in a good position because it will be ready to deliver business applications on the new platform when necessary.

The great migration to the IP contact center is underway. While there are many approaches, vendors and users agree that the decision is not driven by the technology, but rather by business applications that the technology enables. BCU and TASB are taking very different paths to VoIP, but each made the right decision for their current and future business needs.

In general, however, the migration is happening very slowly. Art Schoeller, an analyst at The Yankee Group, says, "The move to IP in the contact center is inevitable but not imminent. The transition from TDM to IP, catalyzed by Cisco, is much like the transition from analog to digital systems, which was catalyzed by Rolm. Like that transition over 20 years ago, this transition will take time. And this one is more complex."

IP call center scenario

In a multisite IP network, a call center at headquarters can be connected over the WAN to satellite and home offices.



And the small shall lead

Most IP contact center installations have occurred in small to midsize businesses (SMB). Many of these SMBs use home agents and remote offices. SMBs tend to be more willing than larger companies to take risks, many are growing, and they are reaping the benefits of flexibility and agility.

There are fewer large installations in place, and they are generally multisite, often with overseas positions (including outsourcers). The major vendors such as Avaya, Cisco and Nortel all say they have pure IP installations of 2,000 seats or more.

"The industries making radical changes are the ones who are suffering the most pain from economic and market forces, such as teleservices [outsourcers], airlines, telecom and high-tech companies," says Lawrence Byrd, a convergence strategist at Avaya. "These companies are seeking substantial cost savings from infrastructure consolidation, for example reducing 30 separate [automatic call distributors] to one or two, moving away from the complex and expensive network routing architectures of the 1990s, and intelligently routing the right customer to the right agent, wherever they are.

"These companies understand that they must make more significant investments in network optimization, as well as changes to their business processes and how they manage their people. But they are willing to do so for the payback offered. IP telephony in the contact center is the technology enabler for such transformation," he says.

Today, many of the large installations — those exceeding 200 seats — are hybrid solutions, some sites are TDM, some are IP. Companies use IP trunking between sites and IP to some desktops, for example, at new sites or sites where the switch has been upgraded. The traditional PBX can serve as a gateway, converting between TDM and IP.

Customers with multiple locations are turning autonomous sites into satellite sites, significantly reducing the numbers of servers, applications and licenses required for functions such as routing, reporting, Computer Telephony Integration (CTI), quality monitoring and workforce management.

Another trend is higher adoption rates in Europe/Middle East/Africa and Asia Pacific. North America is generally slower to adopt IP contact center technologies because of more conservative and risk-averse decision-makers, and more large installed systems. However, of Cisco's 1,500 installations worldwide, approximately half are in North America.

Another trend is for companies to adopt VoIP in the enterprise first and then in the contact center. Gartner analyst Bern Elliot says IP system sales already have overtaken TDM system sales for corporations, but "IP adoption in the call center will lag."

Elliot predicts that traditional TDM-based call centers will remain the dominant architecture for new system sales in North American until mid-2006. IP-based call center systems comprise approximately 10% of new system sales today.

Lessons from the early adopters

Customers leery of IP contact centers typically express concerns about security, quality, reliability and scalability. Early implementers say they faced challenges, primarily with quality of service, but they used assessment, configuration, testing and monitoring to successfully address those issues. As Lee Bostrom, CIO of Glenview State Bank, says, "If you've done what you need to do for your network for other applications, running phones on IP is not a leap of faith."

Many early implementers say voice is more secure and more reliable over IP than it was in a TDM world, and the enhancements to their networks for voice also have benefited their data applications.

Early implementers have been risk takers to a degree, but those who succeed are also prudent. For example, when Glenview State Bank implemented an Interactive Intelligence IP-based solution in 2002, it clearly saw the potential benefits for growth, flexibility and disaster recovery.

When the bank had to trigger its disaster-recovery plan because of a basement flood, it added seats at the branches and reroute calls quickly, with no effect on service. The enterprise solution has 200 to 240

Keys to IP contact center success

Tips and tricks to ease IP implementations.

1. Understand the business drivers. IP in the contact center is a business decision, not a technology decision. Don't lose sight of that.

2. Conduct a network assessment, and make upgrades so your network is rock solid. Quality of service is critical. Some companies might need to upgrade to the latest versions and releases of routers and switches. Many establish a separate virtual LAN for voice. Ensure adequate power on the Ethernet network, and test it. Spend more time preparing and testing your remote sites. Network assessments are prerequisites for most vendors that might offer them directly, through partners or as an option for companies to self-assess.

3. Include testing initially and as an ongoing practice. Test VoIP quality and monitor as your network changes. Continually test for network vulnerabilities as you do for your data applications.

4. Take your time. Choose your migration approach, applications, infrastructure platforms and partners wisely.

5. Involve a cross-functional team in the planning and implementation, including call center professionals. These applications are so important that this can't be a purely technology-driven event.

6. Keep it (relatively) simple. Minimize the number of vendors, the complexity of your network and the number of technology platforms. Your network will be easier and less expensive to maintain, manage and support.

7. Don't be cheap. Make the necessary investments in redundancy, capacity, network testing, resource training and piloting.

8. Be involved. Expect to be an active, hands-on participant. Choose your vendor carefully and pick one that understands VoIP, but don't just rely on it. Build an internal team that understands the network and applications well.

positions, with eight to 12 seats in the call center serving Chicago suburbs. All branch offices are IP, and the center resides in one of the branches.

Glenview focused on finding a partner it could trust and ensured that the network foundation was solid. The bank implemented a virtual LAN and used standards for their servers (Windows NT) and routers (Cisco). It continues to follow the rigorous security processes applied to all other applications for its voice and call center applications.

Software vendor Attachmate, which has three distributed sites for technical support, spent about two years evaluating products and realized that TDM was too expensive for what it wanted to do. A pure IP solution from Nuasis offered the company lower total cost of ownership — estimated at 30% lower than TDM initially, with additional savings over time by avoiding proprietary hardware. Attachmate also saw benefits from virtual operations across sites and CTI in hours instead of months.

For Vegas.com, the official Las Vegas travel site, moving to IP made sense given its tremendous growth. The company tried a hybrid approach first, adding IP cards to its existing Nortel Option 11C.

When Vegas.com moved in late 2003, it migrated to pure VoIP, leveraging much of its existing Nortel investment for 125 call center agents and 50 corporate users. The company saves on wiring, moves, adds and changes, and networking of retail locations, while buying flexibility for the future.

Like many companies, it plans to add multimedia and CTI.

"I felt no risk. We used the same applications we had in the TDM world and just changed transport; the applications don't care," says Brian Hayashi, engineering director for Vegas.com. "However, you have to be an active participant in the system implementation and support. You can't rely solely on the vendor."

Finish Line, one of the nation's leading athletic specialty retailers in Indianapolis, Ind., replaced a 10-year-old corporate switch to support growth in the direct-to-consumer business. Contrary to the popular approach to implement IP in the enterprise first and call center last, it started with the call center. Finish Line put approximately 50 seats on its 13 IP-based system with Session Initiation Protocol phones in July 2003 and added the 300 enterprise seats in October.

The company has seen benefits in lower IT costs as Finish Line grows — adding new positions, making routing changes and moving positions readily. It also has gotten richer applications, with enhanced reporting already in place and multimedia planned.

"Our keys to success were a thorough evaluation process and extra due diligence to understand the systems and find the right partner," says Robert Gray, director of telecommunications.

Promises, promises

Some of the early predictions about the benefits of IP contact centers haven't been realized.

- Standards-based systems were one early driver, creating expectations of choice, interoperability and reduced costs. Today, endpoints are a mix of H.323, proprietary and Session Initiation Protocol, with SIP the emerging leader.
- Another early incentive was an open approach that would let customers choose between various elements of voice infrastructure and applications. Some vendors offer an open approach, but most try to sell a single-vendor solution.
- While multimedia is a potential benefit of IP applications and infrastructure, it is not a driving force in many cases, as most centers still are highly dominated by voice contacts and aren't yet ready to invest in multimedia solutions.
- The hyped benefits of IP for wiring cost savings don't always apply. Many companies already have the wiring or run separate wires for voice anyway.
- Staff costs can be reduced greatly in some scenarios, such as the large multisite environment that centralizes servers and their management. However, staff roles and responsibilities are often not reduced, but rather are rearranged to manage the applications and networks.

Vendor variations

Vendors differ on the definitions of IP solutions and the benefits of "pure" IP vs. hybrid solutions. As you would expect, each vendor promotes the solution and migration approach that its platform enables.

Traditional voice switch vendors such as Avaya, Aspect, EADS Telecom, NEC, Nortel, Rockwell and Siemens offer TDM or IP-based solutions, and migration paths between them. These vendors offer "transport neutral" applications. The call center server applications work equally well with an IP or TDM (or hybrid) platform, letting customers choose their transport preference and migrate without changing applications.

Call center application suites such as Genesys and Interactive Intelligence work with TDM or IP switching on a variety of platforms.

IP-centric vendors, such as Cisco and Nuasis, offer IP solutions only. They say anything short of a pure IP approach compromises the application opportunities and corresponding benefits that IP enables, while also offering a migration path for those with TDM sites today.

Interactive Intelligence and Nuasis also offer a suite of bundled applications that bring the benefits of simpler implementation of CTI and multimedia capabilities, for example.

Hosted solutions are another option promoted by companies such as CosmoCom and Telephony@Work.

Looking ahead

The breakthrough in adoption of IP in the contact center will occur as more companies share evidence that it is low risk, it works and there are quantifiable business benefits.

Gary Ketron, director of worldwide technical support for Attachmate, summarizes what many companies are experiencing with IP adoption: "When we started our pilot, our fear was that VoIP was not a technology whose time has come. After the pilot, our belief is that this is a technology that's right for us, and from which we'll benefit tremendously."

Bocklund is president of Strategic Contact. She can be reached at lori@strategiccontact.com.

Contact center cost savings

The key application opportunities for IP contact centers:

- **Large, multisite environments** are moving away from complex network and CTI-based routing to more centralized call routing over an IP network. They achieve savings in network costs, and in the costs of maintaining and running the call routing solutions themselves. They also save on applications that were deployed previously on a per-site basis.
- **Home agents** that connect over a VPN or run digital sets over IP with a fallback to the PSTN. Tower Travel in Chicago cut the cost per remote agent from $560 per month to $50 per month by setting up people in their homes rather than paying real estate costs.
- **Satellite offices** that provide additional locations for call center staff and additional labor to tap into for peaks, disaster recovery or other needs. These sites can survive the loss of the main location platform and also can have local trunking. Many banks and credit unions are implementing this approach using IP.

Outsourcers turn to IP contact centers

Outsourcers, particularly offshore outsourcers, are deploying IP contact centers to help them grow quickly and cost effectively.

TransWorks, a leading provider of outsourcing services from India, had 400 seats 15 months ago and now has 1,650 seats. The company plans to add another 400 to 800 seats this year. TransWorks migrated from a TDM switch to a Cisco IP contact center.

According to CEO Prakash Gurbaxani, the company purchased a platform that works today and that will provide the infrastructure it will need down the road. The vision includes growth into additional call centers and countries, including an aggregating network based in the U.S. that will route calls anywhere in the world.

Amicus, a leading U.K. outsourcer for multichannel customer contact and fulfillment, launched its service 18 months ago. During the planning stages, the company knew its choice of technology platform would be key to achieving its goals and knew it had to deliver a low-cost service that would compete against the typical U.K.-based outsourcer, and India-based centers.

The company selected an IP-based system from Avaya to handle inbound and outbound calling, logging and quality monitoring and other applications. By going with IP, Amicus reduced the cost of wiring in its historic building. Twenty of its 130 agents are remote, with that number expected to rise to 50 later this year.

The company also is testing wireless positions, using USB headsets connected to laptops within homes and eventually at hot spots.

Charles Burns, sales and marketing director, recommends going with one vendor, which he says was a major factor in avoiding serious technical problems. Future plans include putting agents in India or other locations for labor savings, while using the solid technical and support infrastructure it built in the U.K.

A server engineered to deliver on both sides of the price/performance equation.

The HP ProLiant DL380 G3 gives you true high performance at a truly affordable price. While our Intel® Xeon™ processor-powered HP ProLiant DL380 G3 server certainly offers blazing performance, the engineers behind it would challenge you to rethink the definition of performance entirely. Consider, for example, what happens when you need to add a storage device to a typical server—the server must be powered down, and your productivity drops to zero. This fact led us to design hot-pluggable technology on the DL380 that allows you to swap out a number of key server components, including the reliable and efficient HP DAT 72h tape backup solution without ever interrupting server operation. The DL380 and DAT 72h also feature space-saving designs, and server management is easy yet robust thanks to our ProLiant Essentials Software. Demand more uptime and more real performance from a server. And demand more value, from HP.

HP ProLiant DL380 G3 SERVER

$3,018

- One Intel® Xeon™ processor 3.06GHz with 512KB cache (upgradable to 2 x 3.20GHz)
- 1GB PC2100DDR SDRAM (12GB maximum)†
- Integrated Lights-Out (iLO) management (standard)
- ServerWorks GC-LE Chipset
- Integrated Smart Array 5i Plus Controller
- Three available PCI-X slots (2 hot pluggable)
- Two NC7781 PCI-X Gigabit NICs (embedded)

Enhance your system.

HP StorageWorks DAT 72h HOT-PLUG TAPE DRIVE

- Industry-standard DDS technology
- Up to 36GB native capacity on a single tape, 72GB at 2:1 compression†
- HP StorageWorks One-Button Disaster Recovery (OBDR) restores your entire system at the touch of a button
- Up to 3MB/s native data transfer rate, 6MB/s with 2:1 compression

$1,349

(after $150 instant savings)*

intel inside XEON

hp invent

*HP StorageWorks DAT 72h offer good through 5/31/04.

BUY NOW

Click www.hp.com/go/proliantesg9

Call Toll Free 1-888-225-7535

You'll get nothing. And like it.

No spam. No email fraud. Nothing but the messages you want.

MailFrontier™
Email is good again.™

CLEAR CHOICE TEST

Cisco's MDS 9509

Director SAN switch gets top ratings in management and feature columns

■ BY RANDALL BIRDSALL AND EDWIN MIER, NETWORK WORLD LAB ALLIANCE

Cisco's done it again. Packed with 112 ports of 2G bit/sec Fibre Channel, the latest version of Cisco's MDS 9509 delivers a feature set, management interface and performance that earned it our Clear Choice designation.

We first viewed this Cisco storage-area network switch early last year (see www.nwfusion.com, DocFinder 1824). The latest software (Version 1.3(3)) supports new quality-of-service (QoS) traffic classes and routing between virtual SAN (VSAN) groups. Additionally, new optional modules deliver storage virtualization and caching capabilities. The switch hardware base is the same and earned it a near-perfect performance score, although this rating dipped a bit because this round of testing was more extensive and a tad more critical.

The 9509 remains a top performer in our high-end SAN switch tests. Cisco showed up, and all the other SAN switch marketplace leaders — including Brocade Communications and McData — stayed at home, in spite of our invitation to compete head-to-head with Cisco. Brocade and McData hinted at major new director-class architectures due out in the coming months, and we'll test them when they deliver their new versions.

The 9509 supports an array of interface modules. Up to seven hot-swappable line cards can be any mixture of 16- or 32-port, 2G bit/sec Fibre Channel Switching Modules. Then there's an eight-port Gigabit Ethernet IP Storage Module, which lets users directly integrate popular storage-over-IP connections with the Fibre Channel fabric. The module supports both iSCSI and Fibre Channel-over-IP links. This connectivity and conversion was not verified in the testing.

The Cisco switch also delivers the survivability users expect at the core of their SAN fabric. Each 9509 ships with redundant, hot-swappable management/fabric-control cards, called supervisors, and redundant power supplies.

There's nothing quite like a good command-line interface (CLI) to manage a Cisco network device, unless there is an even better GUI. The 9509 has both. The CLI has the standard Cisco IOS look and feel. And the GUI delivers effective central management, featuring dynamic topology mapping.

The Cisco Fabric Manager GUI is impressive. Extensive configuration capabilities are accessible, which is helpful because these capabilities can seem imposing to a first-time user. The main GUI screen offers a directory tree on the left side for selecting the management topic, an auto-discovered fabric topology map on the right. Multiple tables for configuration and statistics are accessed through tabs at the top.

Most impressive is the copy-and-paste configuration, which lets the user select any configured switch and apply all the same settings to any other switch. Locating particular devices or links also has been simplified: If the IP address of a switch or label of an inter-switch link (ISL) is not enough, you can select the component you want from a configuration table, and its image is highlighted instantly in the fabric topology map.

The Fabric Manager also can readily push new software images out onto one or a group of switches. And we confirmed that new code could be loaded and activated under full operational load — without dropping a bit.

The 9509 brings a smorgasbord of features to the table.

Consider the capabilities offered for Fibre Channel diagnostics. The 9509 includes a built-in protocol analyzer, driven from the CLI, for control traffic, which is very effective for diagnosing Fibre Channel issues.

Cisco also supports a mirrored-port capability to which frames between any two ports in the fabric can be replicated, without disrupting ongoing traffic. Fibre Channel frames can be encapsulated into Ethernet frames, using the Cisco Port Analyzer Adapter, and captured in 'libpcap' format — a popular format for storing packet traffic. The resulting dump can be analyzed within Ethereal, a popular open source analyzer application, for which Cisco has developed a Fibre Channel decode plug-in.

Cisco also offers its proprietary storage equivalent to virtual LANs (VLAN) — VSANs. VSANs separate groups of ports into discrete "virtual fabrics," up to 1,000 per switch. This isolates each VSAN group from the disruptive effects of fabric reconvergence that may occur in another VSAN. And, as with VLANs, routing is used to forward frames between initiator and target (SAN source and destination) pairs in different VSANs.

Cisco has integrated VLANs and VSANs effectively: The IP Storage Services Module, which extends the SAN fabric into an IP network, can map 802.1q VLAN tags to VSAN identifiers.

Cisco also offers an effective QoS solution that uses a traffic-distribution algorithm and four output queues. Three queues are assignable by the user for prioritizing traffic, while the fourth queue is reserved for Fibre Channel control traffic.

Storage virtualization is a buzzword in the SAN industry that implies storage volume management, mirroring and replication across physical locations, which is transparent to users and applications. Cisco offers two specialized module options that support these virtualization functions: The Advanced Services Module, produced jointly with Veritas Software, and the Caching Services Module (CSM), co-developed with IBM.

Commendable performance

Users seeking as close to wire-speed performance as they can get, under maximum load on all ports, will want to use

How We Did It

Spirent Communications provided all the performance testing equipment we used. We employed five SmartBits SMB-6000B chassis, fully populated with FBC-3602A 1G and 2G-bit/sec Fibre Channel modules. Spirent's SmartFabric test application, Version 1.31, provided port-by-port results.

Cisco submitted an MDS 9509 switch populated with two DS-X9530-SF1-K9 Supervisor 1 cards running firmware Version 1.3(3) and seven DS-X9016, 16-port 1G and 2G bit/sec Fibre Channel cards.

All tests were run for 30 seconds using small (60-byte) and large (2,148-byte) frames at 100% load and were repeated several times to note variability. Latency was measured while applying less than maximum loads.

With the high-stress, full-mesh throughput test, we configured the 112 SmartBits ports to send frames to, and receive from, each other port.

In the reboot, we cut off and restored power to see how quickly it could resume normal operation.

To test non-disruptive code load, we did a full-mesh test of large frames across all 112 ports. A code load sequence was initiated and completed while the traffic flows continued.

A fabric failure was simulated during a full-mesh test by removing the active Supervisor module while traffic was passing.

Net Results

Cisco MDS 9509

OVERALL RATING 4.7

Company: Cisco, www.cisco.com **Cost:** $2,900 per port, for chassis fully loaded with two supervisor modules and all 16-port, 2G bit/sec Fibre Channel modules and SPFs (per-port transmit/receive components).

NetworkWorld CLEAR CHOICE

Pros: Superb management; richly featured; the best performing SAN switch tested to date.

Cons: Per-port price is high; throughput degrades under torturous "full-mesh" load test with all minimal-sized packets.

The breakdown	
Management 30%	5
Features 25%	5
Performance 25%	4.5
Architecture 20%	4
TOTAL SCORE	4.7

Scoring Key: 5: Exceptional; 4: Very good; 3: Average; 2: Below average; 1: Consistently subpar

only the 16-port modules in the 9509. That's because the 32-port modules introduce over-subscription — a SAN euphemism for bottlenecks, a condition Cisco documents.

We ran the switch through both torturous and more typically realistic tests, all at 100% offered load. It performed nearly flawlessly — that is, delivering theoretical maximum throughput — except for a few worst-case load scenarios. For example, in the full-mesh test with a very small frame size — an absolutely worst-case scenario — the switch dropped to 54% of theoretical line rate. However, through every test, even with congestion, the switch maintained fair and evenly distributed throughput. We noted too that, in the absence of congestion, latency — the time it takes frames to move through the switch — ranged from 10 microsec to 250 microsec, depending on frame size. This is a normal and acceptable range, given variable-length frames traversing one or more modules and the internal switching fabric.

The 9509 also has a link-aggregation feature. We built a "port channel," Cisco's term for a group of aggregated ISLs connecting two 9509s, and we saw no degradation in throughput across the aggregated switch-to-switch trunk links, compared to the same load sent between ports on one switch. When we failed one of the ISLs in a trunk group, the switches dutifully reallocated streams from the failed link to the others in the group. The total time for this reconvergence, where throughput on affected streams is temporarily halted but no data was lost, was 115 millisec.

To abuse the switch, we pulled the active supervisor module and tried upgrading the software with all 112 ports transferring SAN traffic over 12,432 unique flows. Neither condition had any degrading effect on throughput performance because of the failover redundancy of the two supervisors. Boot time after a power failure was a very respectable 2 minutes, 32 seconds.

Cisco also provides an abundance of security features for its management and the SAN fabric. With the use of a RADIUS or Tacacs+ authentication servers, administrators can be assigned very tailorable access and configuration rights.

Additionally, IP-based Access Control Lists can be applied to management access, whether the administrator is accessing via an Ethernet management interface (out-of-band) or from another switch using IP over Fibre Channel (in-band).

What's more, all management traffic is encrypted — using SNMPv3 for the GUI, Secure Shell for the CLI and secure file transfer for moving files to and from the supervisor.

The SAN fabric itself is secured through hardware-enforced zoning, which is performed at ingress, read-only zones, fixed port types and device authentication via the Fibre Channel Security Protocol.

The 9505 is a powerful director-class SAN switch that sets a high bar for the industry in terms of features and management. While we can't call it perfect, we can say it's the one the competition has to beat.

Birdsall is a senior test engineer for, and Mier is a network technologist, consultant and founder of, Miercom, a network consultancy and product test center in Cranbury, N.J. They can be reached at rbirdsall@miercom.com and ed@mier.com, respectively.

NW Lab Alliance

Miercom also is a member of the Network World Lab Alliance, a cooperative of the premier reviewers in the network industry, each bringing to bear years of practical experience on every review. For more Lab Alliance information, including what it takes to become a partner, go to www.nwfusion.com/alliance.

RECLAIM YOUR EMAIL

Visit us at N+I
Booth #2705

Spam and virus protection at an affordable price.

- No per user license fees
- Prices starting at $1199
- Powerful, enterprise-class solution

Barracuda Spam Firewall

BARRACUDA NETWORKS

Order a free evaluation unit at
www.barracudanetworks.com

POWERFUL EASY TO USE AFFORDABLE

Aggressive Reseller Program
Get more info by visiting **www.barracudanetworks.com/NI**
or by calling **1-888-ANTI-SPAM** or **408-342-5400**

ALL POINTS COVERED.

» SECURITY » WIRELESS » COLLABORATION & VoIP
» INFRASTRUCTURE & SERVICES » PERFORMANCE & DATA CENTER

Your role is expanding.

As business infrastructure moves to the forefront, your company relies on you to keep existing systems at peak performance while tackling a broad range of new requirements. Securing wireless networks, implementing collaboration technologies, improving regulatory compliance, ensuring business continuity—all while doing more with less.

Enterprise challenges demand end-to-end solutions.

As networking and communications professionals, you need to focus on an end-to-end, system-wide approach when building and optimizing your business infrastructure:

- » Security
- » Wireless
- » Collaboration and VoIP
- » Performance
- » Data Center and Storage
- » Infrastructure and Services

Pre-register by May 8th.
Go to INTEROP.com for details and registration
Use Priority Code: **ADAVZ2ND**

Put it all together.

Only NetWorld+Interop brings you the latest strategies, techniques and products for every point in your infrastructure—and shows you how they can add up to an integrated, end-to-end solution that meets every requirement on your list.

Make the connection at NetWorld+Interop.

For 17 years, NetWorld+Interop has helped networking professionals take their enterprises and their careers to the next level. At NetWorld+Interop Las Vegas 2004, you'll make the industry's best ideas and latest technologies relevant to your needs, and discover that even the toughest networking challenge is all in a day's work.

NETWORLD+INTEROP
LAS VEGAS • MAY 9–14, 2004
EXHIBITION: MAY 11–13, 2004

MediaLive INTERNATIONAL

The End-to-End Networking and Communications Event

CLEAR CHOICE TEST

Network Physics NP-2000 appliance

Collects useful network-performance stats, but user interface is sluggish

■ BY BARRY NANCE, NETWORK WORLD LAB ALLIANCE

Fantasy league sports enthusiasts use player and team statistics as a key factor in knowing which players to trade to gain an edge over other enthusiasts. A winning — or losing — season can often be traced back to the right — or wrong — set of statistics. Similarly, useful network performance measurement depends on obtaining the right statistics.

We recently tested Network Physics' NP-2000, along with Version 3.0.4 of its central console software. Its superior statistics, charts and graphics, and its ability to relate business functions to specific network links, impressed us. We were dismayed, however, by its glacially slow user interface and its inability to monitor server CPU, process, memory and disk resources. We also wished it automatically could resolve problems via scripts or external programs, as some monitoring tools do.

The physical universe

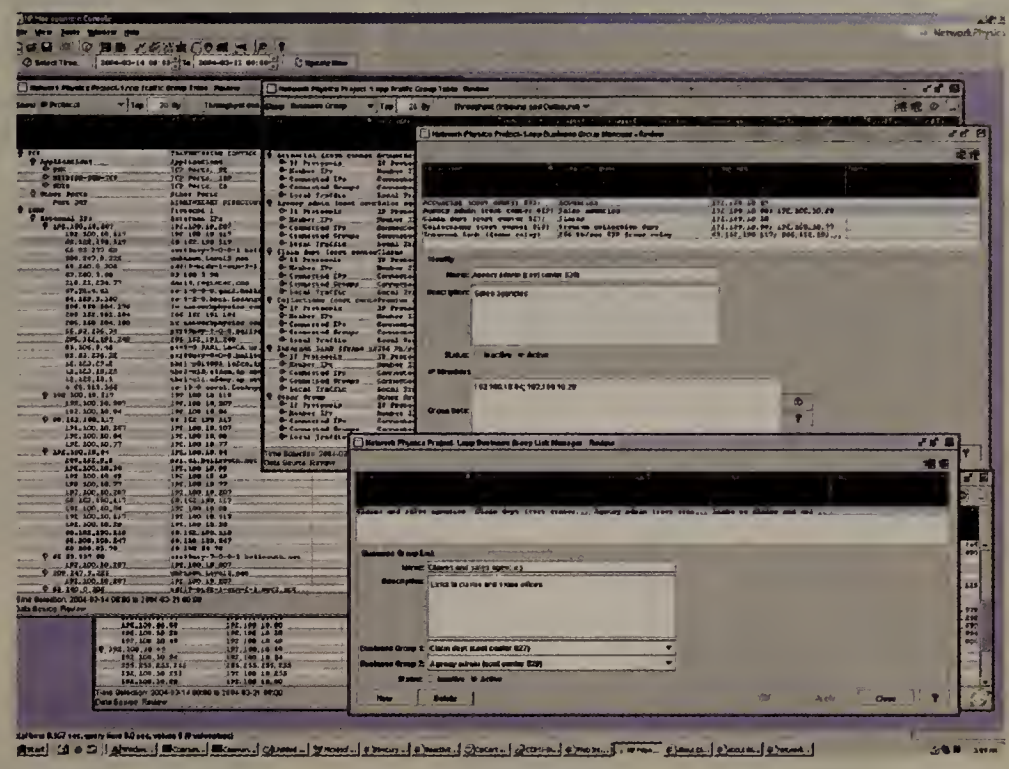
The NP-2000 is a complex tool for traffic analysis, reporting and alerting. Listening passively via an Ethernet tap or mirrored switch port, it captures up to 750M bit/sec of network traffic, then slices and dices the results several ways to produce a plethora of graphs, charts, tables and alerts. The NP-2000's Traffic Group Table, one of its principal reports, shows inbound and outbound traffic levels, both in megabit-per-second and total volume. Another report displays a multi-metric time series chart.

We could tell the NP-2000 to group the Traffic Group Table information by IP protocol, IP address, total traffic levels or one of several other options. The Business Group feature let us associate a cost center, business function or company department with one or more IP addresses. We then hierarchically linked those business groups. At our option, the NP-2000 organized its reports, such as the Traffic Group Table, by Business Group and Business Group Link. Simulating a portion of a large insurance company, we set up actuarial, agency administration, claims and collections groups, each with a set of IP addresses. Impressively, the NP-2000 let us indicate the sharing of an IP address among the agency administration and claims groups.

The appliance generates alerts when it detects a traffic condition that crosses a user-defined threshold. The traffic condition might be inbound or outbound Packet Throughput, Packet Traffic, Total Throughput or Total Traffic greater than a specified value, such as 50M bit/sec. The NP-2000 distinguishes between three levels of alerts: minor, major and critical.

For the error conditions we created in the lab, the unit logged the errors and, optionally, sent us e-mail notes and issued SNMP alerts. However, the NP-2000 lacks the ability to perform corrective actions, such as sending a port reset command to a switch or telling a server to reboot.

Several other monitoring tools offer this feature. Furthermore, the NP-2000 included alert thresholds that related to increases in specific types of network activity. When a decrease occurred in our tests — such as an outage — the NP-2000 ignored the error situation.



The NP-2000 displays a wealth of metrics and network details, organized by business function, protocol or other criterion.

Understanding some of the NP-2000's statistics might require some extra study of network technologies. For example, the NP-2000 defines Server Reset Rate as the number of TCP sessions terminated with a TCP reset by a server per second over the selected time interval. Similarly, it defines Connection Request Rate as the number of attempted TCP connections per second over the selected time interval, with an attempted connection occurring when the client sends a TCP SYN request to the server, regardless of whether the server responds. (Both these statistics relate to traffic management. An unusually high Connection Request Rate, for instance, might signal the onset of a denial-of-service attack.)

Ease of use

The NP-2000's primary interface, which you download from within the appliance, is a Java-based central management console for configuring and viewing statistics, charts, graphs and reports. The unit also has a Web server that emits browser pages for viewing some (but not all) reports and performing some basic configuration tasks. A one-time-use serial port ASCII terminal interface lets you assign the unit an IP address at installation time.

Unfortunately, all too often we found the management console interminably sluggish, and so almost unusable. While drilling down through the Traffic Group Table window's IP addresses, we experienced delays from 40 seconds to nearly 5 minutes before the table displayed the sub-items for the entry we were expanding. Clicking ahead to indicate the next table entries we wanted didn't work, because the console didn't keep up with our selections.

Similarly, clicking the Update toolbar item caused the status message "Accessing Top Group Data ..." to appear, and the console became unresponsive, with no hourglass cursor, for nearly 3

See Network Physics, page 81

Net Results

NP-2000

OVERALL RATING 2.8

Company: Network Physics, (650) 230-0900, www.networkphysics.com. **Cost:** $100,000 to $200,000 for an average initial deployment of two to three units. **Pros:** Superior statistics, graphs and charts; relates business functions to network infrastructure components. **Cons:** Sluggish user interface; no server monitoring; no ability to automatically resolve problems.

The breakdown

Monitoring 20%	3
Reporting 20%	4
Ease of use 20%	2
Notifications 10%	3
Corrective actions 10%	1
Documentation 10%	3
Installation 10%	3
TOTAL SCORE	2.8

Scoring Key: 5: Exceptional; 4: Very good; 3: Average; 2: Below average; 1: Consistently subpar

THOMAS M. SIEBEL
Chairman and Chief
Executive Officer

Sprint

KATHRYN A. WALKER
Executive Vice President
Network Services

GM

ANTHONY E. SCOTT
Chief Technology
Officer, IS&S

CeBIT america

Find Solutions to Your Enterprise Technology Puzzles

CeBIT America – the leading Information & Communications Technology (ICT) event for the Enterprise Business Marketplace - combining a broad-based mix of products and services to provide insight, information and answers to all of your enterprise technology issues.

Qualified Enterprise Professionals: Apply online today for complimentary exhibit floor admission. Log on to: www.cebit-america.com and input Priority Code B4AAN to take advantage of this Special Offer!

Platinum Media Sponsor:
THE WALL STREET JOURNAL.
PRINT & ONLINE

Platinum Conference Sponsor:
BusinessWeek

Program Partner:
DCI

Network Physics
continued from page 79

minutes. When we asked the vendor about this, we learned the software performs database queries and sometimes performs DNS lookups when a user clicks on Traffic Group Table entries.

Moreover, after minimizing and then restoring the console window, it would sometimes come up empty, appearing completely gray with no menus, no interior windows and no response to keypresses and mouse clicks. We'd have to tell Windows to kill the task. We were also disappointed the software did not let us create a new "adaptive alert," defined by Network Physics as a threshold exceeded by the moving average of the metric value over the latest time interval, known as the time window.

Installing the NP-2000 and its console software was straightforward. The documentation consists of Adobe Acrobat PDF files, online help and a brief, printed installation manual.

The NP-2000 uses moving averages, standard deviations and other quantifications to produce a wealth of charts, graphs and tables to help you manage your network. It could be a statistics lover's dream — and we'd recommend it wholeheartedly — if it was more responsive, had a corrective action feature and gathered performance metrics from servers.

Nance runs Network Testing Labs and is the author of Introduction to Networking, 4th Edition *and* Client/Server LAN Programming. *His e-mail address is barryn@erols.com.*

How We Did It

We installed the NP-2000 machine on our lab's six-segment Fast Ethernet network. Each segment consists of a server and 25 clients, all connected to the Internet via T-1 and frame relay lines. To access the NP-2000's Web-based reports interface, we used Internet Explorer 6.0. We ran the unit's central console software on Java Runtime Environment 1.4.2, running in turn on Windows 2000 Advanced Server on a Compaq Proliant ML570 containing four 900-MHz CPUs, 2G bytes of RAM and 135G bytes of fast SCSI disks.

NW Lab Alliance

Nance also is a member of the Network World Lab Alliance, a cooperative of the premier reviewers in the network industry, each bringing to bear years of practical experience on every review. For more Lab Alliance information, including what it takes to become a partner, go to www.nwfusion.com/alliance.

Other members: Mandy Andress, ArcSec; John Bass, Centennial Networking Labs, North Carolina State University; Travis Berkley, University of Kansas; Jeffrey Fritz, University of California, San Francisco; James Gaskin, Gaskin Computing Services; Greg Goddard, EDS; Thomas Henderson, ExtremeLabs; Miercom, network consultancy and product test center; Christine Perey, Perey Research & Consulting; Thomas Powell, PINT. David Newman, Network Test; Joel Snyder, Opus One; Rodney Thayer, Canola & Jones.

Hot COMPANIES TO WATCH

BOOTH 2641

ArrayNetworks® The Application Networking Company

Array Networks, Inc.

SP 7.0

Array Networks, the leader in application networking, offers massively scalable networking appliances that provide breakthrough application acceleration and multi-layered security to application infrastructure. Our enterprise/server class SSL, VPN and application acceleration products securely extend the network and enhance application performance by intelligent integration.

(866) MY-ARRAY or (408) 378-6800 • www.arraynetworks.net

BOOTH 3118

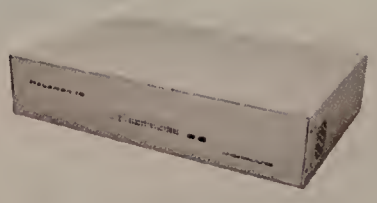
CITADEL™ SECURITY SOFTWARE

Citadel Security Software Inc.

Hercules®

Citadel Security Software, a leader in vulnerability management solutions through automated vulnerability remediation and policy enforcement, helps enterprises effectively neutralize security vulnerabilities. Citadel's Hercules® technology provides users with full control over the automated remediation process, enabling prioritization and resolution of vulnerabilities and enforcement of security policies. For more information, visit www.citadel.com.

(214) 520-9292 • www.citadel.com



Digital V6 Corp.

Kaveman 1 / 8 / 16 Channel Unit

Digital V6 specializes in developing network management solutions for mission critical IT environments. Its Kaveman family of products, consisting of 1, 8 and 16 channel configurations, provides remote control to servers and serial devices via IP. Kaveman offers complete control with BIOS level access and remote power cycling ability. With no additional software or hardware required, Kaveman is the most cost-effective and non-intrusive remote KVM solution available.

(866) 922-2333 • www.digitalv6.com

BOOTH 411

Equinox

CCM840, CCM1640 and CCM4850

Equinox, an Avocent Company, is the leading serial connectivity provider of high-speed serial communications and port management. Our secure console management over IP products offer secure in-band and out-of-band connections to console ports of servers and serially managed devices. CCM appliances are available in 8, 16 and 48-port models.

(954) 746-9000 • www.equinox.com

BOOTH 2702

Executive Software

Sitekeeper®

Executive Software is the manufacturer of SITEKEEPER 3.1, the affordable, easy-to-use systems management software that handles inventory, license compliance reporting, and remote deployment of software, updates and patches. Sitekeeper can even zero in on machines that are missing critical patches or service packs. For free 30 day trialware, visit www.executive.com/nwskHOT.

(800) 829-6468 ext. 4278 or (818) 771-1600 ext. 4278
www.executive.com/hot

Official Sponsor
NetworkWorld at NETWORLD + INTEROP

Hot COMPANIES TO WATCH

BOOTH 2035 & 2753-18

F5 Networks

BIG-IP Application Traffic Management and FirePass Secure Remote Access

F5 Networks keeps IP-based traffic flowing and business information always available to any user from any device, anywhere in the world. Our products ensure secure and reliable access to servers and the applications that run on them. F5 also provides tools to automate communications between applications and the network, eliminating tedious, manual processes.

(206) 272-5555 • www.f5.com

BOOTH 521

Forum Systems, Inc.

XWall™ Web Services Firewall, Version 3.0

Forum Systems, Inc. is the leader in Web services security with a comprehensive suite of trust management and threat protection solutions for the automated web. The award-winning Forum Sentry™, Forum XWall™ and Forum Presidio™ are flexible hardware, software and embedded products that actively protect Web services from the networks edge to the application server.

(801) 313-4400 • www.forumsys.com

BOOTH 1735 & 2235

Foundry Networks

Foundry Networks provides high-performance enterprise and service provider switching and routing network solutions including Layer 2/3 switches, Layer 3 switches, Layer 4 - 7 Web switches and Metro Routers. Foundry Networks serves 5,800+ customers worldwide including China Telecom, Deutsche Bank, University of Miami, and U.S. Armed Forces.

(408) 586-1700 or (888) TURBOLAN • www.foundrynetworks.com

Hotbrick Network Solutions

Hotbrick

HotBrick Network Solutions, a leading provider of network security solutions for small and medium-size enterprises (SME). HotBrick's current line is comprised of dual WAN firewalls with features such as stateful packet inspection, intrusion detection, intrusion prevention, VPN, VLAN and content filtering. The new product line will include switches, SOHO firewall routers and enterprise firewalls.

(305) 398-0888 • www.hotbrick.com

BOOTH 1809 CISCO PARTNER SHOWCASE

iPass Inc.

iPass Corporate Access Service

iPass delivers enterprises simple, secure and manageable connectivity services for mobile workers as they move between office, home, and remote locations. iPass combines its global network of dial-up, Ethernet and the world's largest Wi-Fi footprint with support for campus wireless LANs and home broadband connections to deliver a unified and comprehensive solution.

(650) 232-4100 • www.ipass.com

Official Sponsor
NetworkWorld at NETWORLD+INTEROP

Hot COMPANIES TO WATCH

BOOTH 3221

IronPort Systems

IronPort is the e-mail security performance leader, powering and protecting the most demanding networks in the world. IronPort Messaging Gateway™ appliances provide the first line of e-mail defense combining anti-spam, anti-virus, content scanning, sender identity and reputation, and mail flow monitoring.
IronPort. Rebuilding the World's Email Infrastructure.
(650) 989-6530 • www.ironport.com/future

BOOTH 2535

Network Instruments, LLC

Observer

Network Instruments is the leading developer of network management, analysis and troubleshooting solutions. The Observer family of products combines a comprehensive management console with high-performance Probes to provide monitoring for the entire network (LAN, 802.11 a/b/g, Gigabit, WAN). Founded in 1994, Network Instruments has offices throughout the world and distributors in over 50 countries.
(800) 826-7919 or (952) 932-9899 • www.networkinstruments.com

BOOTH 2401

Network Hardware Resale

We buy and sell USED CISCO, Juniper, and Extreme routers. Network Hardware Resale, the world's largest supplier of Used Cisco, offers 50-90% off Cisco Global list prices. If you have equipment to sell, or would like a price on refurbished hardware, contact us at sales@networkhardware.com.
(800) 451-3407 • www.networkhardware.com

OpenNetwork Technologies

Universal IdP

OpenNetwork provides end-to-end identity management solutions that build on companies' Microsoft-based technology infrastructures and extend them to more efficiently secure and manage multi-platform IT environments. Its Universal IdP software simplifies administration of user identities and privileges, letting you deliver more services with less administrative burden and at lower costs.
(727) 561-9500 • www.opennetwork.com

Rittal Corporation

Server and Networking Cabinets and Accessories

Rittal provides enclosure solutions for IT applications, bringing experience to designing smart, cost efficient IT solutions. Products include network and server cabinets, thermal, power and cable management, monitoring and security. From our adaptable TS8 server rack, to our innovative liquid cooling, Rittal products are engineered to address challenges in today's IT environments.
(800) 477-4000 • www.rittal-corp.com

Official Sponsor
NetworkWorld at NETWORLD + INTEROP

Hot COMPANIES TO WATCH

BOOTH 743

Rose Electronics

UltraMatrix Remote

The UltraMatrix Remote is a powerful product that extends the range and scope of your user stations to control your servers around the office, around the country and around the world. With its superior quality, robust feature set, durability, expandability, and free life-time firmware upgrades, the UltraMatrix Remote is an outstanding value for IT departments.

(800) 333-9343 or (281) 933-7673 • www.rose.com

BOOTH 160

StarTech.com

Server Remote Control

StarTech.com is the professionals' source for server management solutions including KVM switches and rack cabinets. StarTech.com's "Server Remote Control" is a new KVM control over IP product with exclusive Virtual Drive Technology that allows users to update or install software on remote servers from anywhere in the world over IP.

(888) 720-0205 • www.startech.com

BOOTH 762

Tarari, Inc.

Tarari RAX Content Processor

Tarari, Inc., winner of the Best Start-Up award at NetWorld+Interop last year will be showing a new "XML in Silicon" Content Processor that out performs software by up to 200 fold. Finally, enterprise customers, ISVs and network vendors can achieve gigabit XML processing in near-zero CPU time.

(858) 385-5131 • www.tarari.com

BOOTH 2523

WildPackets, Inc.

Omni³

Since 1990, WildPackets has been advancing the science of network fault analysis. From the desktop to the datacenter, from wireless LANs to Gigabit backbones, on local segments and across distributed networks, WildPackets products enable IT organizations to quickly find and fix problems affecting mission-critical network services.

(800) 466-2447 or (925) 937-3200 • www.wildpackets.com

Xtore Extreme Storage

Xtore is the global market leader in delivering white box storage systems, subsystems and data protection solutions to the OEM and solution provider markets. We focus on powerful, cost-effective network-attached storage (NAS), direct-attached storage (DAS), and storage area networks (SAN).

(626) 581-4433 • www.xtore-es.com

Introducing Raritan's Dominion KX. Now KVM over IP is like being there.

Raritan's Dominion™ KX. Better KVM Over IP.

Now you can be everywhere you need to be. Instantly. Because now you can access, diagnose and monitor servers – even the worst server problems – in any location in the world without ever leaving your chair. With Raritan's 19 years of innovation in the Data Center, you now have the newest and most dependable choice for an integrated KVM over IP switch: Dominion KX. It's a plug-and-play appliance. It's incredibly scalable. It works even when your network is down. And by encrypting all KVM data, including video, KX provides the industry's most secure KVM over IP technology. It's the KVM option that will make other options obsolete.

To schedule a test drive, call 1-800-724-8090 x925 or visit us at **www.raritan.com/925**

Command Center
Dominion KX
Dominion SX
Dominion KSX

The KX Digital KVM Switch is one part of RARITAN'S DOMINION SERIES. The complete Data Center Management Solution

Raritan.
When you're ready to take control.™

Management **Strategies**

- CAREER DEVELOPMENT
- PROJECT MANAGEMENT
- BUSINESS JUSTIFICATION

Negotiation know-how

Minimize risk by delegating the job to a skilled professional and establishing processes and procedures.

■ BY NANCY MARKLE

In my experience working as a CIO for several big corporations, I've learned that creating an effective vendor-negotiation process for everything from licensing models to service-level agreements is critical to maintaining competitive edge.

When I first became CIO at Home Savings of America in 1994, I read contracts every spare moment, even on the ferry on the way to Catalina Island while the rest of the passengers were delighting in watching the dolphins frolicking in the water. That is, until I hired a chief negotiator: Ken Horner, who is now an executive vice president with IndyMac Bank.

For senior management, delegating this responsibility to someone else is not without its risks. However, a chief negotiator who does the job well can get the most out of your IT investments.

Senior managers must have utmost faith in the person or team you designate to handle the negotiations. As a CIO, I often found that vendors attempted an end-around when negotiations didn't proceed in their favor. They would try to contact me directly or lobby my direct reports to get involved on their behalf. When you put a well-trained and qualified person or team in charge of contract negotiations, resist the urge to roll up your sleeves and get involved.

But how do you know if you have the right person or team handling the negotiations? Good negotiators have done their homework, understand the needs and scope of the particular project or technology, and can communicate both up and down the corporate ladder.

When I hired Horner as my chief negotiator, the first thing we did was establish what we both expected from him and his organization; the structure of his organization; and what he needed to do to stay on top of the vendors. We developed in-house boilerplate language with the attorneys so I didn't have to review the same contractual basics, nor did the attorneys. We also developed a one-page executive summary outline so we had the fundamentals of the contract readily available for presentation and discussion with the chairman and/or the board.

The CEO, CFO and I agreed on governance issues, such as how much money each management level had authority over and whom it had to go to if we exceeded that figure.

We also developed a checklist cover page with approval levels and signature lines. For example, if a contract was for $10 million and I needed to sign off on any investments of more than $1 million, the project manager, user project manager and any management between them and me would also have to sign off. If the contract or purchase involved a user group, I had my colleague in the user group approve it, too.

Once the logistics are worked out, your negotiator or negotiation group is free to focus on execution. What follows are some guidelines for how to ensure they protect your company's interests.

1. Seek flexibility and scalability. Things can and do change, so a good negotiator will build enough flexibility into the negotiations to help protect your company from risk and exposure when a technology changes or new opportunities such as VoIP arise.

Vendors often fail to meet their promises regarding scalability. The negotiator needs to make sure the platform will work as your organizational needs grow by building into the contract consequences if certain criteria aren't met, such as expected response time when volumes increase.

2. Play so that everyone wins. One common mistake many firms make is to beat up a vendor to get the absolute lowest price. If the vendor operates at a loss, sooner or later there will be harsh consequences for your company, especially if the vendor goes out of business. Perhaps you'll be forced to pay more for every change to the agreement, or you'll get the shaft on customer service because another client is paying more for the same thing.

3. Take names and numbers. References are a key component of any negotiation. Along with the standard supplied references, the negotiator should ask the vendor for names of companies that had challenges with the vendor (not-so-good references). For both good and bad references, seek out other key decision-makers, influencers and end users within those companies. That might mean talking to the CFO, project manager, user or programmer. Have your respective project leaders and end users participate in the reference checks by talking to their counterparts.

Why do it this way? All involved will glean some lessons from the other company's experience and mistakes. And your team will be able to build a trusted relationship with the reference company and keep in touch as deployment challenges arise, possibly avoiding costly missteps. And finally, your negotiator will be working from a position of strength by talking to the reference company's negotiator and will be better prepared to work out the best deal for your company.

"When you put a well-trained and qualified person or team in charge of contract negotiations, resist the urge to roll up your sleeves and get involved."

Nancy Markle
President, Society for Information Management

4. Manage the life of the contract. Vendor management throughout the life cycle of the contract is crucial. When organizations don't practice good vendor management, it might be very costly when there is a risk or problem discovered in the later phases.

Your employees need to know when to escalate problems to the corporate level or direct reports if a vendor doesn't meet the standards laid out in the contract. People are often afraid to raise a red flag because they don't want to be blamed.

Finally, it's critical to monitor the milestones set in the contract to make sure they're being met, instead of waiting until the contract comes back up for review two or three years down the road. By that time, you might have poured millions and millions of dollars down the drain on a project or technology that easily could have been fixed or replaced much earlier. That's when all that work the negotiator put into designing the contract will pay off.

Markle is president of the Society for Information Management, a professional association in Chicago that provides resources and programs to help IT leaders develop their management skills and enhance their business knowledge. She has more than 30 years of experience in the IT and business world, including stints as CIO at Arthur Andersen Americas, Home Savings of America, Fannie Mae and Georgia Power. She can be reached at nmarkle@fielding.edu.

Remote access & support from your USB flash drive

Try it FREE at CrossTecCorp.com

Streamline & optimize your Help Desk operations

Integrates well with your system management software

Top-rated remote access security

Works with all your systems - Windows, Mac OS X, Linux & more

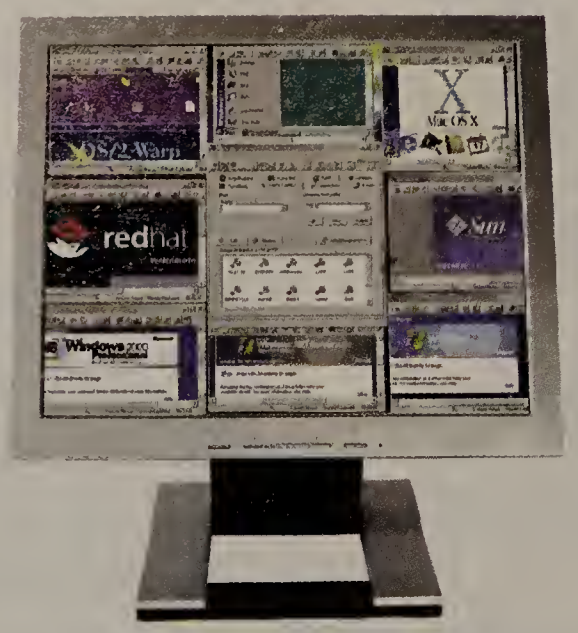
Near real-time screen redraws - even cross-platform

Advanced scripting options and file synchronization

One-button hardware & software inventories

IT pros fix more problems - faster

Control PCs from a desktop, PocketPC, Browser or USB Flash Drive



Control one or more PCs at the same time - regardless of OS.

NetOp RemoteControl

Controlling your PC, or assisting users, is as close as your key chain. New NetOp Remote Control v7.65 lets you remotely access and support all your Windows, Linux, Mac OS X, and CE Devices from a desktop, Pocket PC, Internet connected PC or now from a USB Thumb Drive. Standardize on award-winning NetOp Remote Control for faster, more secure, remote control and support. **Take a FREE test-flight today.**

Editor's Choice
PC Professional - 2004

Editor's Choice
Computerworld - 2003

Editor's Choice
PC Magazine - 2002

Editor's Choice
PC Direct - 2001

Editor's Choice
PC World - 2000

Editor's Choice
Computer Reseller News - 1999

CrossTec Corporation

Toll-free sales and support: 800.675.0729
Services@CrossTecCorp.com

www.CrossTecCorp.com

Who's Protecting Your Network?

GTA Firewall Products
Tough Network Security

- ✔ Building Firewalls for over 10 years
- ✔ ICSA 4.0 Corporate Certification*
- ✔ 5 appliances to match your network needs
- ✔ Easy, Flexible Implementation Options
- ✔ IPSec VPN
- ✔ Affordable pricing

Global Technology Associates, Inc.

1-800-775-4GTA • www.gta.com • info@gta.com

Is security this big when managing your data center?

Ours is, only in smaller packages.

Fingerprint Authentication Scanner
AlterPath™ Bio

Enterprise KVM Solutions
AlterPath™ KVM

Advanced Console Servers
AlterPath™ ACS

Network Management Gateway
AlterPath™ Manager

Intelligent Power Distribution Units
AlterPath™ PM

Cyclades' data center management solutions offer a full range of security features across its entire product line of console servers, power management, KVM, biometric scanner and network management. With SSH v2, IP Filtering, strong authentication, event logging and data logging, Cyclades can make your network into a secure heavyweight contender in the data center world.

LINUX INSIDE

For a **FREE** white paper on data center security, please visit us at www.cyclades.com/securitywp

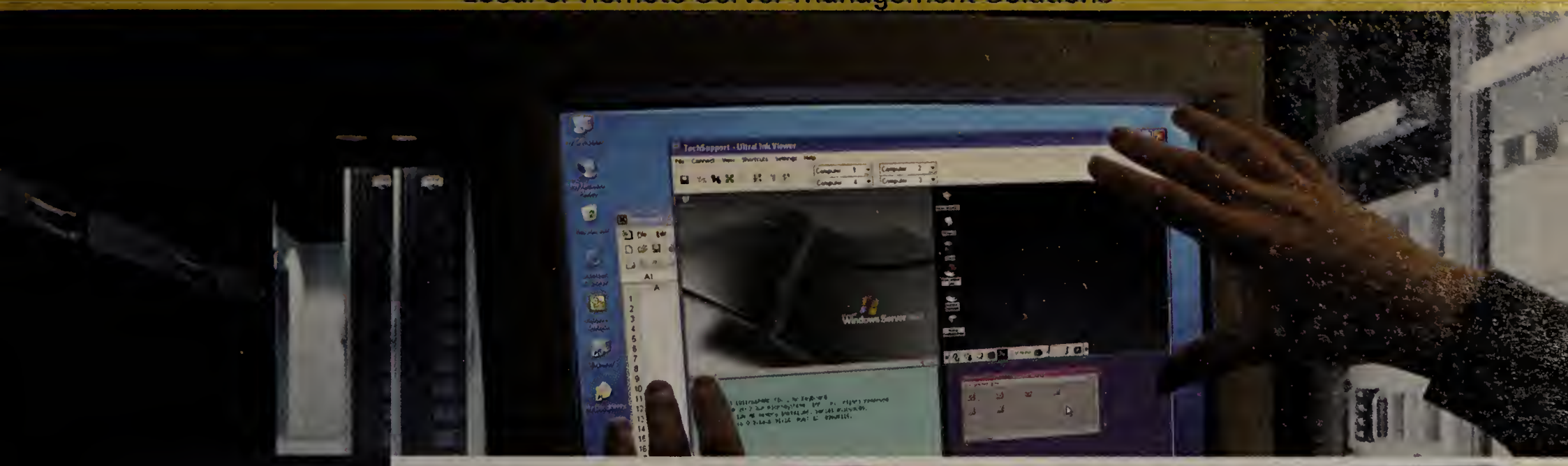
www.cyclades.com/nw

cyclades
Everywhere with Linux

1.888.cyclades • 1.888.292.5233 • sales@cyclades.com

SERVERS WITHIN YOUR REACH FROM ANYWHERE

Local or Remote Server Management Solutions



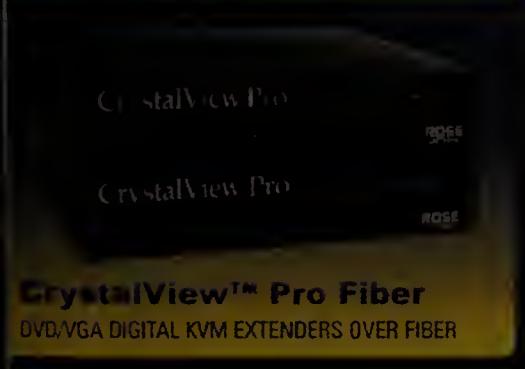
A KVM switch allows single or multiple workstations to have local or remote access to multiple computers located in server rooms or on the desktop regardless of their platforms and operating systems. KVM switches have traditionally provided cost savings in reducing energy and equipment costs while freeing up valuable real estate.

Recognized as the pioneer of KVM switch technology, Rose Electronics offers the industry's most comprehensive range of server management products such as KVM switches, extenders and remote access solutions. Rose Electronics products are known for their quality, scalability, ease of use and innovative technology.

Rose Electronics is privately held with world-headquarters in Houston, Texas and sells its products worldwide through a large network of Resellers and Distributors. Rose has operations in the United Kingdom, Spain, Germany, Benelux, Singapore and Australia.

RackView™

KVM RACK DRAWER WITH KVM SWITCH OPTION



CrystalView™ Pro Fiber

DVD/VGA DIGITAL KVM EXTENDERS OVER FIBER

Rose Electronics
10707 Stancliff Road
Houston, Texas 77099

ROSE US	+281 933 7673
ROSE EUROPE	+44 (0) 1264 850574
ROSE ASIA	+65 6324 2322
ROSE AUSTRALIA	+617 3388 1540

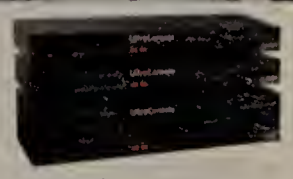
UltraLink™

REMOTE KVM ACCESS OVER ETHERNET OR DIAL-UP

- Connect to remote computers over Ethernet or dial-up
- Single, dual, quad models
- Up to 1280x1024 resolution, supports all platforms
- Scaling, scrolling, and auto-size features
- Easy to install, give it an IP address and run the remote client, no licensing required
- Quad screen mode allows you to see four servers from one screen
- Secure encrypted operation with login and computer access control

UltraConsole™

PROFESSIONAL SINGLE-USER KVM SWITCH SUPPORTS UP TO 1000 COMPUTERS



- Connects up to 1000 computers to a KVM station
- Models for 4, 8,16 computers
- Advanced visual interface (AVI)
- Compatible with Windows, Linux, Solaris, and other O/S
- Connects to PS/2, Sun, USB, or serial devices
- Converts RS232 serial to VGA and PS/2 keyboard
- Free lifetime upgrade of firmware
- Security features prevent unauthorized access
- Full emulation of keyboard and mouse functions for automatic, simultaneous booting
- Easy to expand

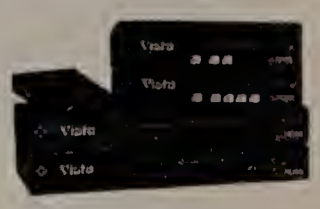
UltraMatrix Remote™

REMOTE MULTIPLE USER KVM MATRIX SWITCH ACCESS OVER IP OR LOCALLY

- Connects 1000 computers to multiple user stations over IP or locally
- High quality video up to 1280 x 1024
- Scaling, scrolling, and auto-size features
- Secure encrypted operation with login and computer access control
- Advanced visual interface (AVI)
- No need to power down servers to install
- Free lifetime upgrade of firmware
- Available in several models
- Easy to expand

Vista™ & Vista-Mini™

LOW COST SINGLE-USER KVM SWITCH SUPPORTS UP TO 64 COMPUTERS



- Low cost and easy to use
- Saves physical space, equipment and power costs, reduces clutter
- Available in two different styles
  - DB25 connectors, use Rose UltraCable, supports USB
  - PC connectors, use a separate cable for keyboard, mouse, and monitor
- Front panel LEDs show power & connection status
- Heavy-duty steel, fully shielded chassis
- Rackmountable

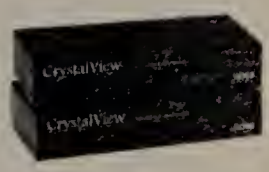
UltraMatrix™ E-series

PROFESSIONAL MULTI-USER KVM SWITCH 2 - 4 KVM STATIONS TO 1,000s OF COMPUTERS

- PC or multi-platform (PC/Unix, Sun, Apple, others)
- Advanced visual interface (AVI)
- Powerful, expandable, low cost
- Easy to expand
- No need to power down most servers to install
- Security features prevent unauthorized access
- Free lifetime upgrade of firmware
- Video resolution up to 1600 x 1280
- Available in several models

CrystalView™ Cat 5 & 6 CrystalView Plus™

KVM EXTENDERS OVER CAT 5 & 6



- Extend your KVM station up to 1,000 feet from your computer using standard CAT 5/6 cables
- VGA, PC, Sun, Serial, Audio, and Mini versions
- Available in 2 models:
  - Single Access - Extends keyboard, monitor, and mouse 50 to 1,000 feet away
  - Dual Access - Allows you to add a second keyboard, monitor, and mouse to the local unit
- Fully buffered signals to ensure consistent remote operation of your PC
- CrystalView Plus
- Available in single, dual, and quad video models
- Video resolution up to 1600 x 1200

800 333 9343
WWW.ROSE.COM

ROSE ELECTRONICS

How does your rack really stack up?

Take the APC Rack Challenge and find out how the New NetShelter® VX outperforms your brand.

Whether you are consolidating servers, relocating your data center, or centralizing distributed networks, selecting the right brand of enclosure is crucial to successful implementation. Take the APC Rack Challenge today to make sure your facts and your racks really stack up.

THE APC RACK CHALLENGE

Name: _____ Title: _____

Company: _____ Phone: _____

Address: _____

How many racks do you currently have installed? _____

Features to expect in today's IT rack enclosures	NetShelter® VX (AR2101BLK) no side panels	Compaq Rack 10000 Series (245161-B21) no side panels	Your rack brand here:
Integrated rear power distribution channels that provide zero-U, toolless mounting of basic, metered, and switched rack-mount power distribution units.	✓	✗	○
Integrated rear cable management channels that allow efficient cable routing and easily accessible cable containment.	✓	✗	○
Available with scalable cooling options to support heat densities up to 7.5kW*.	✓	✗	○
Exceeds major server requirements for front door ventilation.	✓	✓	○
Meets or exceeds warranty requirements for all major servers.	✓	✓	○
InfraStruXure compatible. Seamlessly integrates into APC's modular, manageable, pre-engineered data center architecture.	✓	✗	○
Vendor neutral rack configurator designed to support most third party servers and networking devices.	✓	✗	○
5-year warranty	✓	✗	○
"Fits Like a Glove"** money back guarantee that all IT equipment will fit in the rack.	✓ HP/COMPAQ • SUN • IBM GUARANTEED COMPATIBILITY DELL • CISCO • LUCENT	✗	○
Compare! Savings of almost 40%	**$1039**	**$1359†**	**$**

Yes! I took the APC RACK CHALLENGE! ✓

Designed specifically for the cabling, cooling and security demands of today's IT environments, the NetShelter® VX is a complete infrastructure compatible with a full range of integrated APC components. Vendor-neutral, all you need to add are the servers of your choice.

NetworkAIR™ RM Air Distribution Unit

Unique 2U rack-mounted fan unit delivers additional cool air and improves circulation.

1U Rack-mount LCD Monitor/Keyboard Drawer

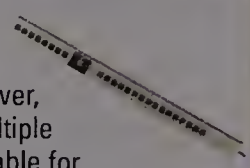
Maximizes space in data center environments.

Environmental Monitoring Unit

Monitors ambient temperature, humidity and other environmental conditions in racks.

Rack-mount PDU

Provides up to 5.7kW of power, eliminating the need for multiple outlet strips per rack. Available for both single- and 3-phase input power.



**Based on APC Internal Research and testing. ** See link on promotions page for terms and conditions. † Source of average pricing: www.HP.com. Prices may vary or change from time to time. Not applicable to other SKU's or models.*

1 TAKE THE RACK CHALLENGE TODAY!

Online:
http://promo.apc.com • Key Code q796y

By Fax:
1) Fill in your business information, indicate your rack brand of choice, and check off the applicable fields.
2) Fax the completed Rack Challenge to the following number:
Fax 401-788-2797

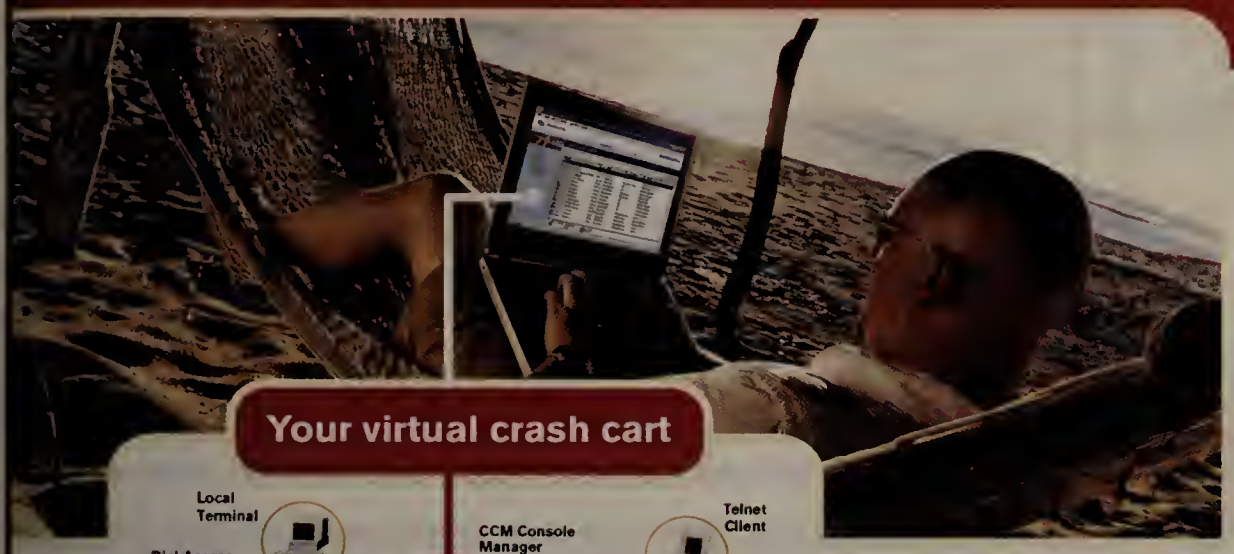
2 RECEIVE YOUR FREE T-SHIRT

Be one of the first 100 respondents and receive a FREE "I took the APC Rack Challenge" T-shirt!

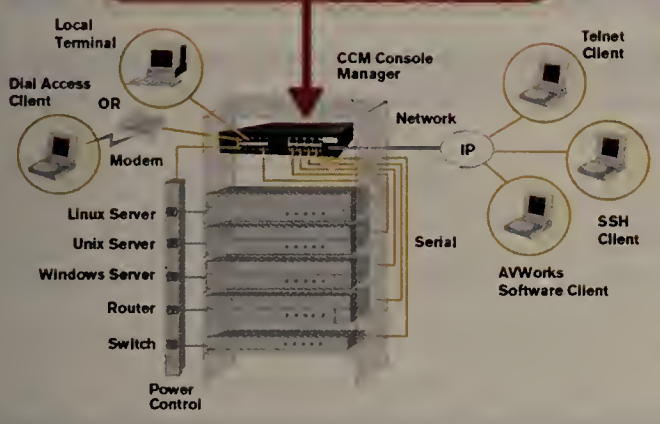
APC®
Legendary Reliability®

EQUINOX
an Avocent Company

Secure Console Port Management
Extend Your Reach



Your virtual crash cart



Relax and fix the problem from virtually anywhere.

When critical servers or network equipment malfunction, the Equinox CCM console manager and AVWorks® management software give you the tools to securely and quickly restore normal functionality from anywhere. **Extend your reach.**

Visit Equinox at:
NETWORLD+INTEROP
LAS VEGAS • MAY 9-14, 2004
May 11 - 13, 2004
Booth # 411

For your free white paper on Best Practices for Secure Console Port Management visit

www.equinox.com/ccm4

For a 30-day product evaluation call 1-800-275-3500 ext. 247 or 954-746-9000 ext. 247

CCM Console Manager features:

- SSH v2/Telnet host
- Strong authentication
- Offline buffering
- SUN break safe
- In/out of band access
- Point and click access to serial consoles, KVM and power*

* To be provided in future upgrade for the 48-port model.

One Equinox Way, Sunrise FL 33351, email: sales@equinox.com or for international customers email: intlsales@equinox.com.

Overheated?

Plug In The Simple Solution.

MovinCool spot air conditioners are the answer to your overheating problems. Just roll it in. Plug it in. Turn it on. It's that simple.

- ▶Up to 60,000 Btu/h of cooling power right where and when you need it
- ▶Protects against data loss and equipment failure
- ▶#1 in portable air conditioning for over 30 years
- ▶The only portable air conditioner ETL-verified for performance

MOVINCOOL®
THE #1 PORTABLE SPOT COOLING SOLUTION
800-264-9573 or visit www.movincool.com

MULTILINK
COMMUNICATIONS
PRODUCTS

We Buy and Sell
New and Refurbished
Fully Guaranteed
Overnight Delivery

Routers
Switches
Interface modules
Access Servers
Muxes
DSU/CSU's

CISCO
Including IGX, BPX & MGX

Nortel (Bay) Networks
Lucent (Ascend)
Juniper · Extreme · Foundry
Adtran · Larscom · ADC & others

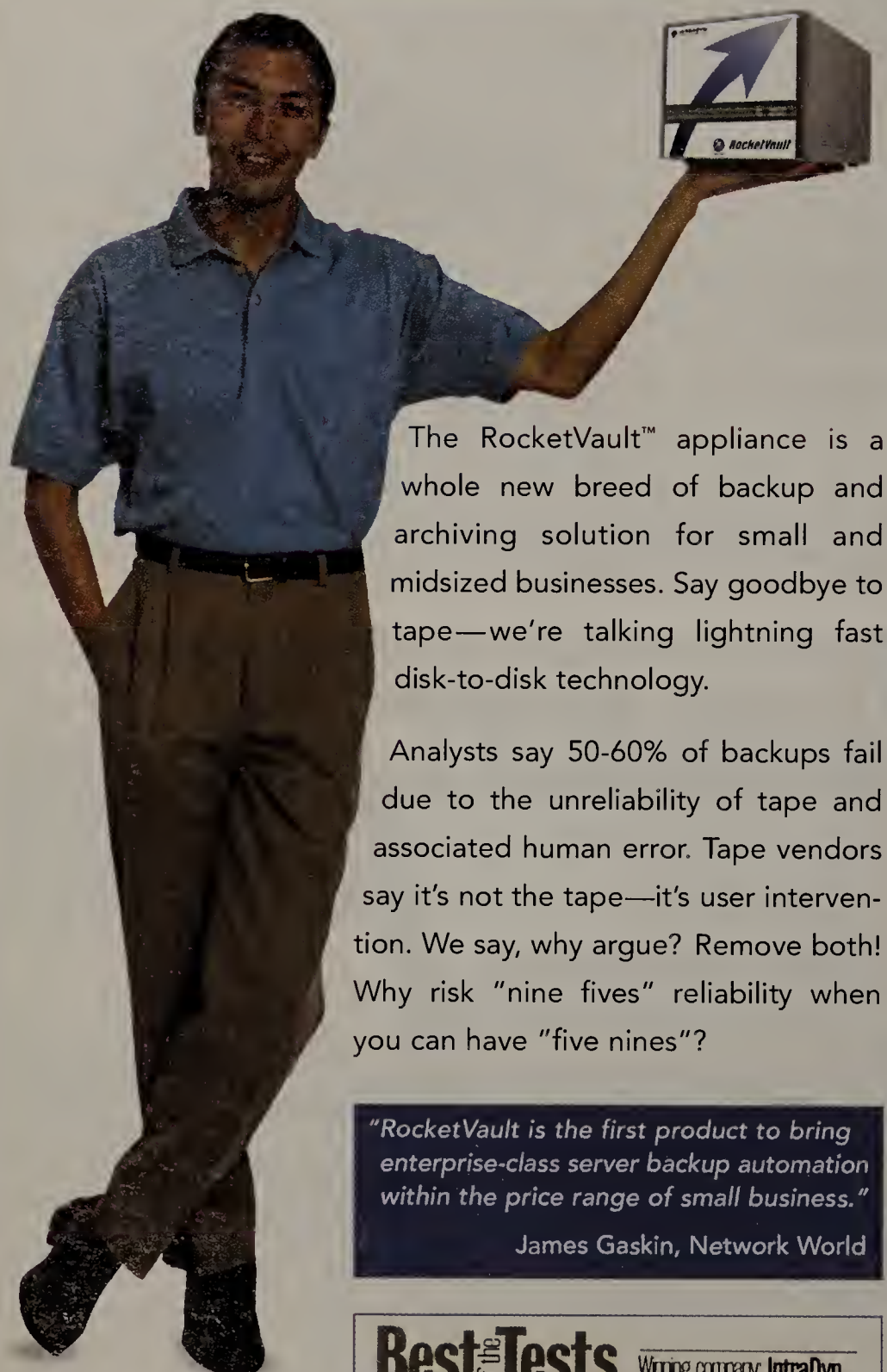
www.mlcp.com
sales@mlcp.com

800-TO-MULTI 800-866-8584

BACKUP AND RESTORE YOUR WAY: OVER THE NETWORK.

Do fast, local backups & restores over the LAN.

Move your data offsite reliably over the WAN.



The RocketVault™ appliance is a whole new breed of backup and archiving solution for small and midsized businesses. Say goodbye to tape—we're talking lightning fast disk-to-disk technology.

Analysts say 50-60% of backups fail due to the unreliability of tape and associated human error. Tape vendors say it's not the tape—it's user intervention. We say, why argue? Remove both! Why risk "nine fives" reliability when you can have "five nines"?

"RocketVault is the first product to bring enterprise-class server backup automation within the price range of small business."

James Gaskin, Network World

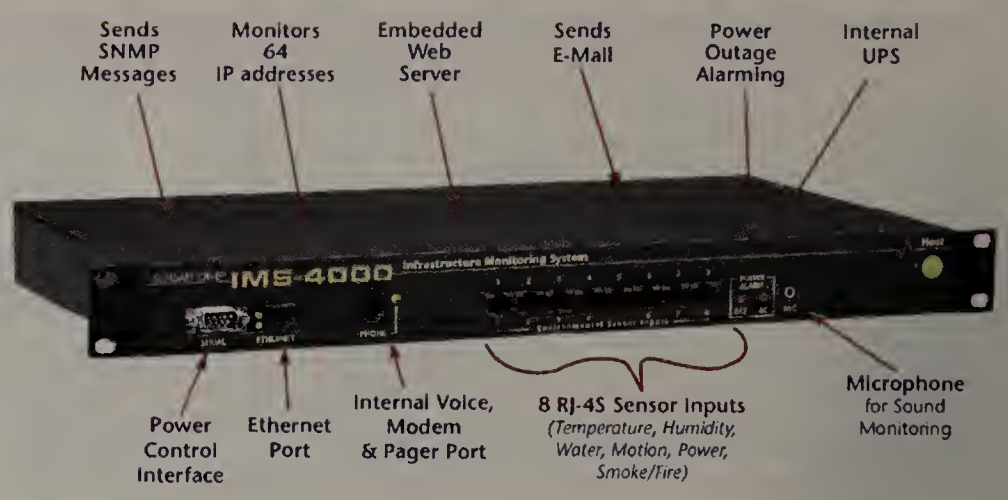
Best of the Tests NetworkWorld 2003 Winning company: IntraDyn Winning product: RocketVault

INTRADYN™
Data Protection Made Simple

2930 Waters Road Eagan, MN 55121 651.203.4600 800.284.4156
www.intradyn.com simplebackup@intradyn.com

SENSAPHONE®
IMS-4000

IMS SOLUTION



BE NOTIFIED BEFORE CRITICAL EVENTS TURN INTO DISASTER!

- Eight environment inputs
- Power sensing
- Monitors 64 IP addresses
- Send alerts to 64 people
- 8 methods of contact
- Calendar scheduling
- Expands to 256 sensors
- Remote power control
- Optional camera

The Sensaphone IMS-4000 Infrastructure Monitoring System monitors critical environmental and network elements in your server room, data center, or telecomm installation and reports to you instantly when events threaten your infrastructure. The IMS-4000 keeps watch so you don't have to. See these features and more on the web at www.ims-4000.com

Tel: 877-373-2700
www.ims-4000.com

Phonetics, Inc.
901 Tryens Road
Aston, PA 19014

Save 40-70% on Network Equipment

Refurbished Routers, Switches, Access Servers and Modules.

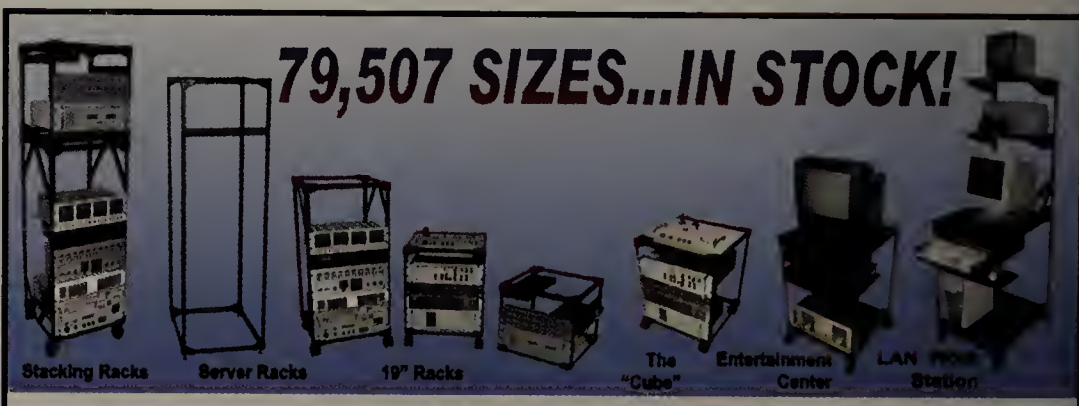
Trust .Value //
Quality Parts.Great Prices

Call today for 10% off 1 item (Up to $500)*
*New customers only.

Trust the Experts
Continental COMPUTERS Since 1984

www.conticomp.com
Call us: (310) 416-1200

79,507 SIZES...IN STOCK!



A New "Patent Pending" Rack Design
Assemble Any Size Rack Using Only 3 STOCK Parts

Choose any width, depth, & height of dual-tapped E.I.A. rack rail from one of 43 sizes in 1-3/4" rack unit increments. Ships knocked-down in 3 small cartons. Build all kinds of neat stuff!

4 RU 13" Deep - $159.85
43 RU 30" Deep - $264.85

Shop Online
www.starcase.com/rack.htm
(800)822-STAR (7827)
(800)782-CASE (2273)

Remote Control

Control your server room from your desktop

Add KVM over IP access and control to any server or KVM switch.

Take total BIOS level control of your servers anywhere, anytime.

Why settle for remote access when you can have complete CLICK AND CONNECT™ remote control over IP!

KVM over IP access *and* control for less than $1000

Available from your favorite catalog, online retailer or authorized reseller

Risk Free

30-day moneyback guarantee

Avocent.

Check out the advantages of KVM over IP control

	SwitchView™ IP	pcAnywhere®
• Access any server via a web browser	✔	✔
• Connect and control your PC throughout the boot process	✔	
• Access and control any server even if the OS is down	✔	
• Add IP remote access to any existing KVM switch	✔	
• Works with any operating system, BIOS level control	✔	
• No software required on the target server	✔	

Avocent, the Avocent logo, SwitchView and CLICK AND CONNECT are trademarks or registered trademarks of Avocent Corporation or its affiliates. pcAnywhere is a registered trademark of Symantec Corporation. © Copyright 2004

www.avocent.com | 866.286.2368

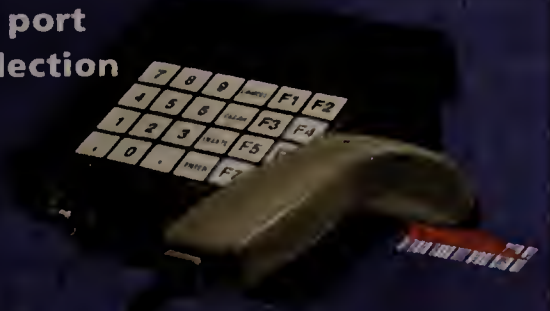
Production Tracking Over Ethernet

Eliminate your shop-floor PCs with ...

Ethernet Terminals from ComputerWise connected to your in-house LAN. Capture production data directly into files on your server.

Features & Benefits

- **Interactive Telnet Client**
- **TCP/IP over 10/100BaseT Ethernet**
- **Built-in Barcode Badge Reader**
- **Optional Mag-Stripe & RFID Badge Reader**
- **Auxiliary RS-232 Serial port**
- **Customizable Data Collection Program Included**
- **Larger keyboard and display sizes available**



COMPUTERWISE.

Call 1-800-255-3739 or visit www.computerwise.com

DATA CENTER SOLUTIONS

In today's demanding data center environment, no one knows how to protect and organize your valuable IT equipment better than Rittal. Our TS-server cabinets securely accommodate the dense mounting of virtually any kind of server, networks or mass storage devices. Maybe that's why so many leading companies around the world count on Rittal for their network infrastructure needs.

- THERMAL MANAGEMENT
- POWER
- CABLE MANAGEMENT
- SECURITY
- VERSATILITY

RITTAL

TEAM RITTAL
GO WITH A WINNER!

CHECK OUT THE TEAM RITTAL WEBSITE AND REGISTER TO WIN!

Use priority code: NWW

Grand Prize:
- Complete Home Entertainment System

Weekly Drawings:
- Louisville Slugger Bats
- Team Rittal Baseball Hats

www.rittal-corp.com/teamrittal

Advertising Supplement

IT Careers in Boston

Without doubt the Boston metro area has been among those most hard hit by the downturn in the technology economy. The telecommunications sector, in particular, continues to see problems, and Terra Lycos has announced additional layoffs and a lowered price on the sale of its Lycos.com operation. Similarly, the financial services sector has stumbled, with the buyout of John Hancock by Canada's Manulife Financial Corp.

However, Boston continues to market itself to the high tech world based on its access to a strong workforce, universities and existing business base. Further evidence can be found in close to $100 million in venture capital and federal grants for early stage companies and an uptick in job listings at companies ranging from Staples Inc. to Partners HealthCare. Boston.com — a business newsletter for the region — continues to follow the financial fortunes of an emerging new technology community, the Boston Life Sciences 20. The Life Sciences 20 includes companies such as Boston Scientific, Charles River Laboratories, Biogen Idec, Millennium Pharmaceuticals, PerkinElmer and Transkaryotic Therapies.

Partners HealthCare — parent company for The Children's Hospital, Beth Israel Deaconess Medical Center, Brigham & Women's Hospital and Massachusetts General — has 50 information technology jobs currently listed.

In addition to some of the longer-term pharmaceutical and life sciences companies, the area boasts of a dozen new start-up companies. These include Biomeasure Inc., Nexcelom Bioscience and Agencourt, which recently received a $30 million grant from National Human Genome Research. Biomeasure, which is now a division of French pharmaceutical company Ipsen, is building a new 38,000-square-foot factory. The Boston Tech Center, a 345,000-square-foot facility, is under construction and also will provide needed office and lab space for Boston's growing biotech and life sciences industry.

Raytheon, one of the long-term corporate headquarters in the area, is also on a hiring cycle. Currently, the corporation lists 10 jobs in the information systems area supporting its businesses. More importantly, the corporation has posted 75 job openings during quarter one for software engineers, architecture developers and systems engineers to work on security and defense contracts.

Staples Inc. also continues its push in using technology to reach customers and improve operations. The high tech research community in the Boston area is also showing some improvement. Forrester Research has shown stable performance over the last six months. IDC, a division of IDG — parent company to Computerworld, InfoWorld and NetworkWorld — is hiring research analysts, particularly in the areas of healthcare and life sciences.

For more information about IT Careers advertising, please contact: Nancy Percival
Vice President, Recruitment Advertising
800.762.2977
500 Old Connecticut Path
Framingham, MA 01701
Produced by Carole R. Hedden

Engineering Development Manager-Offshore : For tech transfer life cycle mgmt co., manage offshore res & devel projects, incl. offshore embedded sys & appl specific integrated circuit (ASIC) solutions div. in India & offshore team of developers & researchers; project plan, exec, implmnt & test at client sites. Req's: Bach's in Comp Engg, Comp Sci or a rel. field. 3 yrs exp in job offered or 3 yrs exp as a Comp Sys Analyst in offshore devel envt. Exp must incl. embedded, enterprise, networking & comm & image processing solutions. Prof in 32 bit RISC/CISC, Hitachi SH/HS, ARM 7TDMI/9TDMI, DSP-TI & AD (TMS320), Windows CE, ITRON, pSOS, VxWorks, C OS II, C Linux, Trimedia SDE, Lauterbach TRACE 32 for Hitachi SH, ARM developer Ste, Red Hat Embedded Tool Ste & Platform Builder. Overseas travel required. 40hrs/wk. Send res. to E-5, P.O. Box 1924, Phila., PA 19105.

PROGRAMMER/ANALYST to analyze, design, develop and maintain client/server and web-based application software using Java, J2EE, Java Script, Java Bean, Applets, JSP, Servlets, EJB, WebLogic, XML, HTML, SQL Server and Oracle under Windows NT and UNIX operating systems. Require: Bachelor's degree in Computer Science, an Engineering discipline, or a closely related field with 2 yrs of exp in the job offered or as a Systems Analyst. Extensive travel on assignment to various client sites within the US is required. Competitive salary offered. Send resume to: John Watson, Venturi Technology Partners, 9428 Baymeadows Rd, Ste 500, Jacksonville, FL 32256; Attn: Job AA.

Sr. Cons. for b/z reqs. analysis, process optimizn, plan, dzn, s'ware dev., test & systems integrn. PM for system & applns. S'ware dev., opernl. CRM (Sales, Svc, Mktng), Collaborative CRM (CTI, Customer Contact Center) & Analytical CRM (Reporting, ROI) projs. Evaluate CRM (Clarify 12.0, Siebel, HP Service Desk 4.5, & Kintana 5.0). Conduct infrastructure scalability assessments & implement CRM & ERP based ERP system for Cust relationship mgmt, GL, HRMS, A/c Payable & T & L Modules. Implement Clarify eFrontOffice V12, ClearSales, ClearSupport, CBO/eBusiness Framework, ClearContracts, Clear CallCenter & Clarity/Nortel CTI solutions. Proposals, presentations, client mgmt, project tech lead & execution. Lead sols design & development, lead teams, proj delivery, client relation & tech team deliveries. BS in CS + 5 yr exp. in job duties OR 5 yr exp in IT PM, Internet tech. & ERP. Must be Clarify CRM Prof. and Six Sigma green belt certified. Comp. salary. Apply: Unilinx, 4625 Alexander Dr., # 110, Alpharetta, GA 30022 with proof of perm. Work authzn.

PROGRAMMER ANALYSTS for Worth, IL office. Design & Develop software applications using Oracle, XML, UML, C++, Sybase, Interwoven, Coolgen, ClearCase, ClearQuest, PVCS, UNIX. Bachelors or Equivalent req'd in Computers, Engineering, Math or related field of study +1 yr of related exp. 40 hrs/wk. Must have legal authority to work permanently in the U.S. Send resume to HR Manager, Compro Consulting Group, Inc., 7179 West,111th St, Worth, IL 60482.

Computer Professionals (Multiple Openings)

Software Engineer/Systems Analyst/Database Administrator/Network Administrator Milwaukee, WI. Must have bachelors degree or equivalent and experience in some of the following skills: C/C++, Java, Web Methods, Cold Fusion, Microsoft Technologies (Visual Basic, .NET, ASP) CRM (Siebel, Clarify, Vantive), Middle Ware Technologies (Orbix, Corba, Tibco, Vitria) Data Ware Housing Tools (Informatica, Data Stage, Abinitio, Business Objects, Cognos, Micro Strategy, Brio) ERP (SAP, People Soft, Oracle Apps, Baan), Mainframe (Cobol, CICS, JCL, VSAM) AS400, Ecommerce, Databases (SQL Server/Oracle/DB2/Sybase), Microsoft Windows(95/98/NT/2000,Exchange), UNIX (Sun Solaris, HP, AIX), Linux and QA (Win Runner, Load Runner, Silk, Quickpro, Manual Testing).**Position requirement: Must be willing to travel and /or relocate per project specification.**Mail your resumes to: jobs@iksolutionsinc.com or Human Resource Director, IK Solutions Inc, 1840 N. Farwell Ave, Suite # 306, Milwaukee, WI 53202.

System Administrator required for Burtonsville, MD office. Design & maintain LAN, WAN, Network Segment, Internet/Intranet Systems; Install & maintain Exchange Servers, Multiplexes, Line Drivers, modems, scanners, D-link hubs, cabling and other hardware. Bachelors req'd in Computers, Engineering + 2 yrs of exp. 40 hrs/wk. Must have legal authority to work permanently in the U.S. Send resume to HR Manager, Childway/KIO Services Inc., 4058 Blackburn Lane, Burtonsville, MD 20866.

Technical Support Analyst

Experience: Minimum 3 years recent experience in a similar position

PCS has an opening for a Technical Support Analyst based in Chicago, Illinois. The selected candidate must have a minimum of a bachelors degree in Electronics or Management Information Systems or Computer Science or Computer related field or equivalent. A minimum of 3 years of recent experience in a similar position is required.

Job Description: The job requires the employee to possess a minimum of 3 years recent work experience in a similar position. Prior experience with designing and implementing solutions for extending systems management capabilities of CA-Unicenter TNG for different types of non-IT devices is mandatory. Must possess work experience using Wireless Devices (Vast, Opto22, Ion Networks, Badger and Nokia) and integration of these devices with CA-Unicenter TNG. Prior experience implementing CA-Unicenter TNG and related suites of Enterprise Systems Management products and software required.

Additional work responsibilities involve performing systems support, computer operating systems configuration, perform systems support and configure TCP/IP and computer networks, **Require prior work experience working on Windows, windows2000 server, Windows 2000 advanced server, Linux, Novell platform.** routers, gateways, LANS/WANS and firewalls. Responsible for in-house systems administration, network management, e-mail management, LAN, VPN, remote access management and providing for in-house users and external clients.

The job responsibility requires travel as required. Please send your resume and cover letter to: Human Resources, Professional Consulting Services, Inc., 1415 North Dayton, #3S, Chicago, IL 60622.

Consultant Systems Analyst will develop leading edge testing methodology to stress test next generation high volume (1+ million users) financial applications built on WebLogic middleware using custom developed LoadRunner virtual users. Will deliver application performance and system resource profiles of all application components. Will analyze applications and characterize performance of systems to identify bottlenecks. Will conceptualize and execute test plan for stress, stability, unit and load/performance testing with a user population of 13 million customers for both web-based and client/server applications. Will assist clients in validating multiple architecture recommendations and in the selection of a cost-effective solution that meets performance and capacity requirements for branch network and future capacity projections. Requires Bachelor of Science or equivalent in Computer Science, Engineering, Math, or Physics and one (1) year in job offered OR one (1) year experience in systems integration and performance testing. Candidate must possess demonstrated expertise in high volume capacity planning, forecasting and performance testing using LoadRunner; demonstrated expertise in performance and cost analysis of web architecture and network configuration; and demonstrated expertise in capacity planning and future forecasting using Interscope. Candidate must also be Certified Product Specialist in the Mercury Interactive LoadRunner tool. Salary: $87,975/yr, M-F, 9AM-5PM. Send 2 resumes to Case #200203581, Labor Exchange Office, 19 Staniford St., 1st fl., Boston, MA 02114. EOE. Applicants must be U.S. workers eligible to accept full-time employment in U.S.

Software Engineer - Applications. Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. Duties: Develop, create and modify general computer applications software or specialized utility programs. Analyze user needs and develop software solutions. Design software or customize software for client use with the aim of optimizing operational efficiency. Analyze and design databases with an application area. Use of Visual Basic, XML, UML, SOL Server 2000, DB2, SOL, C++, COBOL. Reqs. Masters or equivalent in Computer Science, Computer Engineering, Engineering (any field) or related field. Plus 1 year in the job offered or 1 year in a related occupation, including Systems Analyst, Programmer Analyst or Applications Developer. $73,231 /year, 40/hrs/wk, 8AM-4PM. Respond by resume to WORKFORCE DEVELOPMENT PROGRAMS, PO Box 46547, Denver, CO 80202, and refer to Job Order No. CO5075643.

PROGRAMMER ANALYSTS req'd for Raleigh, NC office. Design & Develop software applications using C, C++, VB, Delphi, ASP, XML, UML, Coolgen, Interwoven, Oracle, PL/SOL, Developer 2000 & Designer 2000; Bachelors or Equivalent req'd in Computers, Engineering, math or related field of stuoy + 1 yr of related exp. 40 hrs/wk. Must have legal authority to work permanently in the U.S. Send resume to HR Manager, Allied Business Consulting, Inc., 8700 W.Bryn Mawr, Suite 800 South, Chicago. IL 60631.

Software Engineer wanted to analyze software reqts. & produce functional specification documents & implement software; create test specs. for new subsystems; analyze & reengineer software legacy system; provide mgmnt. w/effort estimations & implementation trade offs; apply software design patterns in C++ environment; design software using UML, Visual C++, C++, COM/DCOM, ATL & STL; modify real time multi-threaded framework adapter to support COM/DCOM; design the interfaces between different subsystems to reduce dependency & boost development process; develop COM/DCOM code generator to generate ActiveX automation components using Rhapsody & ATL tech.; optimize software for performance & memory, GDI handles & other system resources using Visual Ouantify, Purify & PC-Lint; develop configuration mgmnt. adapters for ClearCase, MKS, VSS, PVCS Version manager, on Windows & UNIX oper. systems; assist customers & customer support team. Must have Bach. deg. in Comp. Sci. or related field & 4 yrs. software development exper., incl. exper. with software modeling techniques & UML, exper. with C++, MFC & COM tech. incl. internals of COM/DCOM & ActiveX tech., & exper. w/configuration mgmnt. tools incl. Rational/ClearCase & MKS/Source Integrity as well as expertise in multi-threaded programming concepts & development. Salary $93,209/yr. Send 2 resumes to Case#200204206, Div. of Career Services, Labor Certification Unit, 19 Staniford St., 1st fl., Boston, MA 02114.

IT PROFESSIONALS

Consultant

(Glen Mills, Pennsylvania and other locations through the U.S.). Under the supervision of Senior Consultants, Managers, and Senior Managers, assist in providing consulting services for implementation, testing, development, maintenance and enhancement of software packages and applications. Design software packages. Utilize Rational Rose to design system architecture in Unified Modeling language (UML). Utilize Rational ClearCase, Rational ClearQuest, Adobe Photoshop, Adobe Illustrator, Micromedia Dreamweaver, Micromedia Flash, Microsoft Frontpage, Visual Interdev, and Homesite to develop programming logic and web interfaces. Conduct quality assurance testing of software applications. Create and maintain systems documentation.

Salary $60,000 per year. Mon-Fri, 9:00 am to 5:00 pm. The position requires: Bachelor's degree or equivalent in Computer Science, Engineering (any), Information Systems or Business Administration + 2 years of experience in the job offered or 2 years of experience as a Systems Analyst, Consultant or Developer. Related experience must include at least six months of experience in Adobe Photoshop, Micromedia Flash, Microsoft Frontpage, and Visual Interdev.

Please send your resume, referencing Job Order Number **WEB-415747** to the: PA Careerlink, FLC Unit, 235 W. Chelten Avenue, Philadelphia, PA 19144. EOE.

PROGRAMMER ANALYSTS for Charlotte, NC office. Develop software applications using VB, Crystal Reports, Delphi, ASP, XML, Coolgen, Interwoven; Develop client/server applications in Oracle, PL/SOL, Developer 2000 & Designer 2000. Bachelors or Equivalent req'd in Computers, Engineering, Math or related field of study +1 yr of related exp.40 hrs/wk. Must have legal authority to work permanently in the U.S. Send resume to HR Manager, Masterminds Global Solutions, LLC, 6000 Fairview Road, #1200, Charlotte, NC 28210.

Systems Analyst
Analyze, design, and deploy customized IT solutions based on a client's needs and business environment. Must have Bachelors Degree or foreign equiv. in Computer Science or in a related field & 1 yr. exp. or 1 yr. exp. in a related position w/ability to use: OS Windows, C#, MDX, OLAP, and XML and must be willing to travel and relocate. 40.0 hrs./wk 9:00 AM - 6:00 PM. **Applicants send cover letter and resume to:**
SRA Systems, 1945 Cliff Valley Way. Suite 270, Atlanta, GA 30329, **Attn: S. Srinivasan.**

Radiant Soft Sol, Inc., a S/ware Consulting Co, seeks to fill following Multiple Openings in Arlington Hts, IL & unanticipated locs in US:

Sr. Software Consultants (BS+3 yrs exp), Business/ Systems/ Programmer/OA Analysts (BS + 2yrs exp.), Database Analysts (BS+3yrs exp.), Network Analysts (BS+ 3yrs. exp.) & IT Managers (BS + 3yrs supervisory exp).

Respond by resume to HR, 855 E. Golf Rd, #1125, Arlington Hts, IL 60005.

Engineer (New York, NY): Develop/implement introspective & self-adaptive hardware & software sys. Design, implement & evaluate new program representations. Consult w/ engineers & clients to enhance reliability, scalability & performance. Design systems & techniques to map applications on architectures. Must have M.S. in Comp. Sci. or Elec. Eng., plus 1 yr. specific experience. Send resume to Melanie Peters, Business Manager, Reservoir Labs, Inc., 632 Broadway, Suite 803, New York, NY 10012.

Programmer Analyst in NYC to analyze, dsgn, create prgms & dvlp s/ware prgms & systms using Java, C++, JSP, Oracle, ASP, VB & VBScript. Req. Bach. in Engg, Comp. Sci/equiv. + 2 yrs exp in field. Will accept any combination of ed., training, exp, which will meet min. req. Resp. to Ganesh International, Rajesh Kalra, 12 W. 27th St. 2nd Fl., NY NY 10001. Fax: 212-779-1616 E-Mail: careersusa@crawtsys.com

Quality Eng. wanted by company engaged in graphics and multimedia technology design, manufacturing and marketing. Requires Bach. in CS or EE plus 3 yrs exp. including min. 2 yrs. audio/video software. Reply to ATI Research, Inc. H.R. Dept., Attn: K.B., 62 Forest Street, Marlborough, MA 01752.

Sr. Network Engineer/Administrator wanted by macro-political consultancy co. in NYC, NY. Must have a min. of a Bachelor's degree or foreign equiv. in Computer Sci., Engineering, Business or related and 1 yr. exp. in job offered or as a Network Administrator. In lieu of a Bachelor's degree, the employer will accept an equivalent combination of formal university education and work experience in network administration. Send resume to Catherine Vitale @ Medley Global Advisors, LLC, 451 Greenwich St, 6th Fl., NYC, NY 10013.

Prog. Analysts to analyze, design/develop s/w appls using Java, JavaScript, VBScript, ASP, HTML, Weblogic, Oracle, SQL, COBOL, DB2, CICS under Windows, UNIX & MVS OS; perform unit, functional, integration, regression and systems level testing; analyze user reqs, prepare design documents; develop & enhance online & batch programs; implement, install, test, debug and modify new/ existing appls. Require: BS or foreign equiv. in CS/Engg. (any branch) & 2 yrs exp. in IT. Travel involved. High Salary. F/T. Resumes to: HR, Global IT Solutions USI, Inc., 600 Stevens Port Drive, Ste 125, Dakota Dunes, SD 57049.

Sales Eng'g. - Present & sell comm. & recording equip. to clients. Req'd: 10 yrs. exp. in job or software, sys., or test eng'g job & exp. w/ LAN/ WAN, Windows NT, CTI, CRM and PSAP. Resumes: NICE Systems, Inc., 301 Route 17 North, 10th Floor, Rutherford, NJ 07070. Attn: G. Farese.

Programmer Analysts to analyze, design, develop appls using: C, VB, JavaScript, HTML/ DHTML, EJB, JSP, ASP, Servlet, UML, Oracle, SOL under Windows OS; perform initial study of req and provide feedback; provide on site maintenance support, debug, modify, fine tune and perform code optimization. Require: BS or foreign equiv. in CS/Engg.(any branch) & 2 yrs of exp. in IT. High Salary. Travel Involved. F/T. Positions available in Elgin, IL and Lower Gwynedd, PA. Resume to: HR, Fourth Technologies, Inc., 1108 N. Bethlehem Pike, Suite 8, Lower Gwynedd, PA 19002. Specify location desired on resume.

Programmer Analysts (multiple positions) sought by a New Jersey-based s/ware consulting firm. Must have Bach in Comp Sci., Engg or equiv and one yr relevant exp. Respond to: HR Dept., AK Systems, Inc., 100 Metroplex Drive, Suite 303, Edison, NJ 08817.

Programmer Analyst needed w/exp to analyze, design, develop, test & implement interfaces & custom solutions using C, Pro*C, PL/SQL, Oracle Forms & Reports, Oracle Clinical & Documentum on Windows. Send resumes to: Soft Tech Source - Ramesh Sarva CPA, P.C. 16 Murray Guard Dr., Jackson, TN 38305.

Database Developer

Develop, test and maintain web-based database applications using SQL server 2000, Access 97/2000, VB 6.0, SQL, JavaScript, NET, C/C++ and Crystal Reports. Req. Master's degree in Comp. Sci. or closely related field & proficiency in SQL, .Net, VB6 and Crystal Report. 40 hrs/wk. Send resume /w cover letter to Cindy Dyer, Global Vision Technologies, Inc. 900 Rutger, St. Louis, MO 63104 Fax: (314) 436-9245. Ref. Code: mowz.

VP, Research & Development Lead the vision & technology innovation effort incl. research & development of new products; product development support, budgeting/scheduling; quality assurance & shipping; specify engineering requirements; manage Research, Development, Product Mgmt., Quality Assurance & Tech. Support teams; spokesperson for tech. matters; prepare reports & implement policies communicated by the Board & Exec. Mgmt. Req. PhD in Elec. Eng. or related & 2 yrs exp. in job or 2 yrs. exp. as VP Engineering. Resume to HR, Netuitive 12700 Sunrise Valley Dr., Reston, VA 20191. No calls please.

Vayusa Inc., a pioneering mobile payment and loyalty systems developer, seeks an Information Systems Director to lead its technology development and strategy. Must have MS in Comp. Sci. or related field & 3yrs exp. To apply send resume to: Patrick Binkley, VP Engineering, Vayusa Inc., 61 Chapel St. Newton, MA 02458.

Multiple Positions; 8a-5p, 40hrs/wk

(A) Programmer Analyst Analyze, dvlp, implmt, prgm using C, C++, Perl, Oracle DB2, UNIX & systms analysis & dsgn method.

(B) Tech Supp Spec: Analyze project; assign & coord work; review, test prgm for compatibility; perform web hosting; troubleshoot, debug & provide tech support/updates using Java, J2EE, EJB, Perl, Oracle, ObjectStore, WebLogic, UNIX.

(C) Technical Supp Spec: Analyze project; assign & coord work; review, test prgm for compatibility; perform web hosting; troubleshoot, debug & provide tech support/updates using Visual Studio.NET, ASP.NET, ADO.NET, C Sharp, Visual Source Safe, Oracle, Crystal Reports.NET

Must have 1 yr exp in job offd or as IT professional using comp skills listed for position AND Bach or equiv in Comp Sci/Engg; Electrical, Electronics, Mech or related Engg; Info Tech, Mgmt Info Systms, Commerce, Bus Admin/Mgmt or related field. Send resume (indicating job applying for) to Concept S & S, Inc., 109 E. 17th St., Ste #12, Cheyenne, WY 82001.

Senior Consultant

(Glen Mills, PA and other company + client locations throughout the United States) Responsible for Merger and Acquisition (M&A) integration implementation in the High Technology and Consumer Retail Industries. Responsible for supply chain process design in the Manufacturing Industry Responsible for the implementation of SAP R/3 Variant Configuration. Responsible for implementation of Oracle Financial Suite. Responsible for design of web-based Knowledge Management tools and design and implementation utilizing Microsoft Access based supply chain tools.

Salary: $105,000/year. Work schedule is M-F 9am-5pm. Position requires: Bachelor's degree or equivalent in Computer Science, Math, Business Administration, Engineering or Info Systems plus 3 years experience in the job offered in related occupation of Senior Consultant, Consultant, Associate, Programmer, Analyst, or Management Analyst. Experience in offered position or related occupation must include at least 2 years of experience with SAP R/3 Variant Configuration, Oracle Financial Suite, Microsoft Access, and M&A integration.

Please send your resume, referencing Job Order Number **WEB 415770** to: PA CareerLink, FLC Unit, 235 W. Chelten Ave., Philadelphia, PA 19144. EOE.

Software Engineers:Consultants needed for database programming, Internet programming or Systems side programming Will help clients design, develop, program, and test software implemented on client server technology. The main technologies involved are databases (Oracle), datawarehousing tools (Business objects, Informatica, Cognos), and Internet programming languages (Java, JDBC) or System programming languages (C and C++). Must have 5 yrs. exp. as software engineer or in a related field.

Unix Administrators:Consultants also needed for network implementation and administration, system integration, backup, and recoveries, shell scripting and system securities. Knowledge of management of enterprise network storages devices (SAN and NAS), HP and Solaris Serves, Swithches, HUBs and in Veritas NebBackup Systems. 5 yrs. experience as Unix Systems Administrator or related field.

Req. for both positions: Clients are located in 9 states. Candidates must be willing to move from location to location for assignment durations that varies from 3 mos. to year. Email CV to rtroff@tnscinc.com, Rona Troff, HR Mgr of TechNation Software Consulting, Inc., or mail to 300 N. Dakota Avenue, #505B, Sioux Falls, SD 57104.

Tietronix Software, Inc. (Houston, TX) is seeking Software Developer. 1 yr. exp. in using UML, J2EE, Oracle, SQL Server, XML, Bourne, C Shell Scripting, Rational Rose, Netbeans, Visual Café, Quantify & Purify on Windows, & Solaris. Send resume to 1331 Gemini Ave., #300, Houston, TX 77058, Attn: HR, or email to info@tietronix.com.

ClickFind, Inc. (Bryan, TX) is seeking Computer Programmer for medical contract research industry. 1 yr. related exp. Send resume to 110 North Main Street, Bryan, TX 77803. Attn: Jennifer Fox.

TEES Information System (College Station, TX): is seeking Systems Analyst. B.S. in Computer Science with 3 mon. related exp. using AppleScript, Appletalk, and MAC OS. Send resume to 3579 TAMU, College Station, TX 77843. Attn: Catherine Yancy.

Pro-Tem, Inc. (League City, TX) is seeking Application Developer/Analyst. 1 yr. exp. in using VB, MFC, Oracle, data sampling, embedded coding, and dosimetry computation. Send resume to 2525 South Shore Blvd., #401, League City, TX 77573. email: human.resource@pti-sys.com. Attn: Human Resources.

Technosol Technologies, LLC.,: Systems Analysts: Architect & Test Multi-Tier Enterprise Applications using VB.NET, XML, Web Services, PB, C++, UML, Rational Rose, J2EE, Jaguar CTS and EAI technologies using database in Oracle, Sybase and SQL Server. Req. Degree in Comp. Science or related field, 2 yrs exp. Send resume to: 2606 Peninsulas Dr. Missouri City, TX 77459 or email: technosol@technosoltech.com

Computer Information Support Specialist: wanted by travel management marketing firm in Miami, FL. Applicants must investigate computer software and hardware problems of users. Applicant must have a Bachelors of Science in Computer Engineering and 1 yr. of exp. in the field. Mail resumes only to 4950 SW 72nd Avenue, 2nd Floor, Miami, FL 33155. Attention: Tammy Gonzalez.

Programmer (Roswell, GA): Analyze, dsgn, test & maintain GUIs; dvlp Telephony, Internet & telecommunications Database Systems using Visual C++, Green Leaf, Dialogic SDK, etc. Req. B. Sc. in C.S. or its foreign degree equiv. No exp req but must demo ability to perform job through at least course/or project work w/ Visual C++ & Green Leaf. Resume w/ transcript to President, New Century Telecom Inc. 8180 Greensboro Dr. #700, McLean, VA 22102

Multimedia Web Developer. Consults w/ design, technical, & marketing staff to plan web site dev. Develops graphic & technical architecture of web sites including database design & user interface design. Req Bach. in Advertising or Related Field & 1 yr. of exp. in job or 1 yr. of exp. as a Graphic Designer/ Visualizer. Send Resume: Steven Cohen, Tempart, Inc., 412 SE 13th St., Fort Lauderdale, FL 33316 (jobsite).

Infogen is seeking IT professionals to design applications for clients using Oracle9i, Weblogic / WebSphere, C++, Visual C++, VB, COM, STL, MTS, MSMQ, ASP, Java, HTML, XML, MTS, MSMQ, ADO, UML. Min BS, travel is required. Send resume to infojobs@infogeninc.com. EOE.

Leapers, a fast growing international trade company, looks for System Analyst, DBA to design and maintain customer management system (CMS), warehouse management system (WMS), supply chain management system (SCM), back order/stage order management system (BKM). BS & exp required. EOE.

Graphic Designer. Design & edit graphics in consultation w/production personnel based on appearance, design-function relationship, budget, price, costs & client specification. Build simulated graphic models using Photoshop, Illustrator, & Quark. Req: Bachelor of Fine Arts in Graphic Design. 40hrs/wk. Job/Interview Site: Laguna Niguel, CA 92677. Send resume to Chapman Walters Intercoastal Corp. @ P.O. Box 7242, Laguna Niguel, CA 92607.

DatamanUSA, LLC, a Software Consulting Co. seeks qualified IT Professionals for dsgn, dvlpmt, testing & implmtn of s/ware & database systms. B.S. in Comp Sci, Eng., a related field or equiv w/3 yrs. exp. Applicants must be willing to relocate/travel to various unanticipated locs throughout US. Mail resume to Attn. HR, 315A West Lincoln Way, Ste 15, Cheyenne, WY 82001 or email to jobs_wy@DatamanUSA.com.

Dynamic Systems, Inc.
Programmer/Systems Analyst/Business Analyst
For Lansdale, PA or North Brunswick, NJ

Internet:Java,JSP,EJB,WebSphere,WebLogic,Perl/CGI,VB, ASP,C##, ASP.NET Or VB.NET. **Admin**:AIX,HP-UX, Solaris,Unix,Oracle,Sybase,DB2,Informix or SQL Server. **Skills**:RDBMS, Unix,VC++,C,C++,AS/400,RPG, IBM MF Cobol, DB2,Clintrial, Oracle Clinical Or SAS.
job@dynamicsystems-inc.com
525 Milltown Rd, #107, N. Brunswick, NJ 08902; 650 N Cannon Ave, Lansdale, PA 19446. Phone: 732-246-2297; Fax:732-246-3362.
www.dynamicsystems-inc.com

A Fairfax, VA based Company seeking qualified Programmers/ Analysts/Software Engineers/IT Project Managers poss. MS/BS or equiv and/or relevant work experience. Duties incl.. working with at least 3 of the following: Java, Java Servlets, Oracle, Versata, HTML, XML, Java Script, Websphere, Rational Rose, PowerBuilder FoxPro and SQL Server. Send res. refs. and sal. req. to: Prescient Infotech Inc., 11130 Main Street, Suite 100 E1, Fairfax, VA 22030.

Programmer Analyst. Design & Develop S/W to computerize the payroll on DOS, Win 95, 98 & NT, w/the use of PL/SQL, ASP3.0, SQL Server 7.0, HTML, DHTML. Visual Interdev, Frontpage, VB, Java Script & VB Script. Req: BS in Comp. Sci/Comp. Eng/Electrical Eng. 40 hrs/wk. Job/Interview Site: Lake Havasu City, AZ. Send Resume to Desert Payroll Services Inc. @ P.O. Box 3058, Lake Havasu, AZ 86405-3058.

Senior Engineer (Portland, OR): Develop & implement introspective & self-adaptive hardware & software sys. Design, implement, & evaluate new program representations. Consult w/ teams & clients to enhance reliability, scalability & performance of advanced computer system. Supervise project team & engineers to devise solutions. Min. req's: Ph.D. in Comp. Sci. or Elec. Eng. Plus 1 yr. specialized experience. Send resume to Melanie Peters, Business Manager, Reservoir Labs, Inc., 632 Broadway, Suite 803, New York, NY 10012.

System Analyst. Design, develop, test, code, implement and maintain computer systems and perform programming to meet project requirements for Risk Management Department; design and develop ETL process to upload data from OLTP system to Star Schema; develop interface process to transfer data between Loan Servicing and FACS; use Oracle 7.x, 8.05, SQL Server, Crystal Reports. Require 3-yr college & 2-yr exp as Programmer or IT Consultant. Related exp must include using Oracle 7.x, 8.05, SQL Server, Crystal Reports. 40hrs/wk, 8-5pm, $72k/yr. Send resumes to PO Box 11170, Detroit, MI 48202, reference # 230072. Employer paid Ad.

SurajSoft Inc. is hiring System Admin Managers. Send resume to 304 Town and Country Village Sunnyvale CA 94086. May be placed at client sites nationwide.

IT Education & Training Directory

Contact the companies listed below to help you with your training needs!

To place your ad please call 800-762-2977

IPexpert, Inc.
(866) 225-8064
www.ipexpert.com
CCIE (R&S, SEC, and C&S), CCSP, CCNP, CCNA, IP Telephony

CBT Nuggets
(888) 507-6283 & (541) 284-5522
www.cbtnuggets.com
Affordable training videos on CD
MCSE, MCDBA, MCSD, CCNA, Citrix, Linux, A+, Net +

IronPort.

Rebuilding the World's Email Infrastructure.

IronPort C-Series Messaging Gateway™ Appliance

Kill the crisis. Build the future.

Only one company has built a product powerful enough to manage the startling growth in email volume—and withstand the massive flood of spam, viruses and fraud that threaten your email communication system. To learn how you can future-proof your email with the world's fastest email gateway, visit **www.ironport.com/future** and build beyond the crisis.

IRONPORT™
Powerful. Reliable. Secure.

www.ironport.com

NetworkWorld

Editorial Index

Advertiser Index

Network World Fusion – www.nwfusion.com

3Com Corporation	Lancope
Adobe Systems	Lucent Technologies
Airespace	MessageLabs, Inc
American Power Conversion	Microsoft Corporation
Aventail	NEC Computers, Inc.
Avocent	NetScaler
BNX Systems	NetScout Systems
Cisco Systems, Inc.	NetScreen Technologies Inc
Check Point Software Technologies	New Edge Networks
eEye Digital Security	Novell
Elance	Oculan
F5 Networks	Quintum Technologies
Fidelia	Redline Networks
Fluke Networks	RLX Technologies, Inc.
Force10 Networks	Sana Security
Fortinet	SealedMedia
GCW	Solsoft Inc
Global Knowledge Network	Statscout Pty Ltd
Hewlett-Packard	SUPERCOMM
ITCareers	TrendsMedia Inc.

These indexes are provided as a reader service. Although every effort has been made to make them as complete as possible, the publisher does not assume liability for errors or omissions.

*Indicates Regional Demographic

Network World, Inc.

118 Turnpike Road, Southborough, MA 01772
Phone: (508) 460-3333

TO SEND E-MAIL TO NWW STAFF
firstname_lastname@nww.com

Evilee Thibeault, CEO/Publisher
John Gallant, President/Editorial Director
W. Michael Draper, Chief Operating Officer
Eleni Brisbois, Administrative Planning Manager

FINANCE
Mary Fanning, Vice President Finance
Paul Mercer, Finance Manager
Betty Amaro-White, Event Finance Manager

HUMAN RESOURCES
Elizabeth Price, Director of Human Resources
Eric Cormier, Sr. Human Resources Generalist

MARKETING
Terry Ann Croci, Sr. Director of Customer Experience
Nancy Sarlan, Corporate Marketing Communications Mgr.
Barbara Sullivan, Senior Research Analyst
Judy Schultz, Marketing Design Manager
Cindy Panzera, Marketing Designer

PRODUCTION SERVICES
Greg Morgan, Senior Director, Production Services
Karen Wallace, Senior Director, Advertising Operations
Mike Guerin, Senior Production Specialist
Jami Thompson, Production Coordinator
Veronica Trotto, Advertising Coordinator
Maro Eremyan, Advertising Coordinator
Kristin Douglas, Online Operations Manager
Lisa Thompson, Online Ad Traffic Coordinator

CIRCULATION
Richard Priante, Senior Director of Circulation
Bobbie Cruse, Subscriptions Manager
Mary McIntire, Circulation Marketing Manager

RESEARCH
Ann MacKay, Research Director

DISTRIBUTION
Bob Wescott, Distribution Manager/(508) 879-0700

IDC LIST RENTAL SERVICES
Paul Capone, Account Executive
P.O. Box 9151, Framingham, MA 01701-9151
(800) 343-6474/(508) 370-0825, FAX:(508) 370-0020

SEMINARS, EVENTS AND IDC EXECUTIVE FORUMS
Robin Azar, Vice President of Events
Michele Zarella, Director of Operations
Dale Fisher, Event Planner
Tim DeMeo, Event Operations Manager
Jacqueline DiPerna, Event Coordinator
Karen Bornstein, Sales Operations Specialist
Sandra Gittlen, Events Editor
Neal Silverman, Senior Director of Event Sales
Andrea D'Amato, Sales Director/Strategic Partnerships
Kristin Ballou-Cianci, Senior Event Sales Manager
Maureen Riley, Event Sales Manager
Judy Tyler, Account Executive
Mark Hollister, Senior Director of Event Marketing
Debra Becker, Dir., Marketing & Audience Development
Sara Evangelous, Senior Marketing Manager
Timothy Johnson, Marketing Specialist

ONLINE SERVICES
Kevin Normandeau, Vice President, Online
Hillary Freeley, Director, Online Operations
Susan Cardoza, Director of Business Development and Advertising Services
Deborah Vozikis, Design Manager Online
Adam Gaffin, Executive Editor, Online
Melissa Shaw, Managing Editor, Online
Jason Meserve, Multimedia Editor
Sheryl Hodge, Sr. Online Copy Chief

CUSTOMER ACCESS GROUP
W. Michael Draper, Chief Operating Officer
Sharon Stearns, Mgr. Customer Access Operations
Cara Peters, Project Support Specialist

INFORMATION SYSTEMS/BUSINESS SERVICES
W. Michael Draper, Chief Operating Officer
Tom Kroon, Director of Systems Development
Anne Nickinello, Senior Systems Analyst
Puneet Narang, Manager of Database Technologies
William Zhang, Senior Software Engineer
Manav Seghal, Software Engineer
Rocco Bortone, Director of Network IT
Peter Hebenstreit, Senior Network/Telecom Engineer
Kevin O'Keefe, Systems Support Manager
Brian Wood, Senior Systems Support Specialist
Frank Coelho, Senior Manager, Business Services
Mark Anderson, Business Services Supervisor
Linda Cavanagh, Business Services Administrator

IDG

Patrick J. McGovern, Chairman of the Board
Pat Kenealy, CEO

Network World is a publication of IDG, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. IDG publishes over 275 computer publications in 75 countries. Ninety million people read one or more IDG publications each month. *Network World* contributes to the IDG News Service, offering the latest on domestic and international computer news.

Sales Offices

Carol Lasker, Associate Publisher/Vice President
Jane Weissman, Sales Operations Coordinator
Internet: clasker, jweissman@nww.com
(508) 460-3333/FAX: (508) 460-1237

New York/New Jersey
Tom Davis, Associate Publisher, Eastern Region
Elisa Della Rocco, Regional Sales Manager
Agata Joseph, Sales Associate
Internet: tdavis, elisas, ejoseph@nww.com
(201) 634-2300/FAX: (201) 634-9286

Northeast
Donna Pomponi, Director of Emerging Markets
Internet: dpomponi@nww.com
(508) 460-3333/FAX: (508) 460-1237

Mid-Atlantic
Jacqui DiBianca, Regional Sales Manager
Marta Hagan, Sales Associate
Internet: jdibian, mhagen@nww.com
(610) 971-1530/FAX: (610) 975-0837

Midwest/Central
Eric Danetz, Regional Sales Manager
Agata Joseph, Sales Associate
Internet: edanetz, ajoseph@nww.com
(201) 634-2314/FAX: (201) 712-9786

Northern California/Northwest
Sandra Kupiec, Associate Publisher, Western Region
Keren Wilde, Regional Sales Manager
Miles Dennison, Regional Sales Manager
Courtney Cochrane, Regional Sales Manager
Maricar Legura, Office Manager/Sales Assistant
Teri Marsh Sales Assistant
Internet: skupiec, kwilde, mdennison, ccochrane, mlagura, tmarsh@nww.com
(510) 768-2800/FAX: (510) 768-2801

Southwest/Rockies
Becky Bogart Randell, Regional Sales Manager
Victoria Gonzalez, Sales Assistant
Internet: brandell, vgonzalez@nww.com
(949) 250-3006/FAX: (949) 833-2857

Southeast
Don Seay, Regional Sales Manager
Internet: dseay@nww.com
(404) 845-2886/FAX: (404) 250-1646

Customer Access Group
Tom Davis, Assoc. Publisher Eastern Region/General Manager, Customer Access Group
Shaun Budka, Director, Customer Access Group
Kate Zinn, Sales Manager, Eastern Region
Internet: tdavis, sbudka, kzinn@nww.com
(508) 460-3333/FAX: (508) 460-1237

Fusion
Kevin Normandeau, Vice President, Online
James Kalbach, Director, Online Services
Scott Buckler, West Coast Regional Sales Manager
Stephanie Gutierrez, Online Account Manager
Debbie Lovell, District Sales Manager
Internet: knormandeau, jkalbach, sbuckler, sgutierrez, dlovell@nww.com
(508) 460-3333/FAX: (508) 861-0467

MARKETPLACE
Response Card Decks/MarketPlace
Donna Pomponi, Director of Emerging Markets
Enku Gubaie, Senior Account Maneger
Caitlin Horgan, Account Manager
Jennifer Moberg, Account Manager
Chris Gibney, Sales Operations Coordinator
Internet: jcooper, egubaie, chorgan, jmoberg, cgibney@nww.com
(508) 460-3333/FAX: (508) 460-1192

IT CAREERS
Vice President, Nancy Percival, Western Regional Manager, Caroline Garcia, Central Regional Manager, Laura Wilkinson, Central/Western Account Executive, Mark Dawson, Eastern Regional Manager, Jay Savell, Eastern Account Executive, Danielle Tetreault, Sales/Marketing Associate, Joanna Schumann
(800) 762-2977/FAX: (508) 875-6310

MIT

continued from page 1

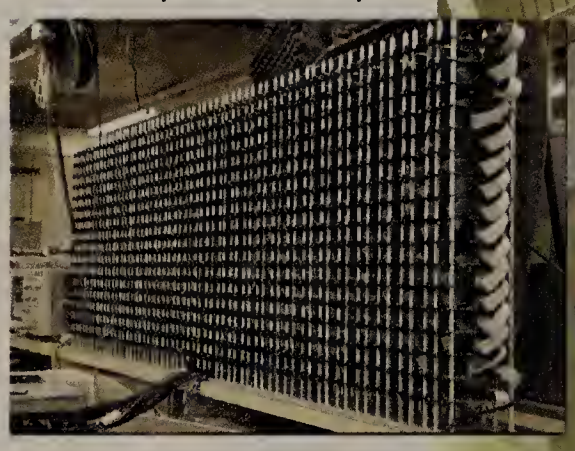
Cambridge campus, away from the more picturesque parts as a temporary structure for its radiation laboratory. MIT expected to vacate the building after the conclusion of World War II. The wooden, asbestos-ridden structure far outlasted its life expectancy. But it couldn't last forever.

MIT tore down Building 20 in 1999, and in its place stands a brand-new, entirely different structure flooded with natural light, gleaming metal surfaces and a form that screams "look at me" to passersby. The new $300 million building — which was formally dedicated last week — is home to MIT's Computer Science and Artificial Intelligence Laboratory (CSAIL). Its designer is renowned architect Frank Gehry, whose other work includes the titanium-clad Guggenheim Museum in Bilbao, Spain, and the spectacularly expressive Rasin office tower in Prague, nicknamed "Fred and Ginger" for its two entwined pieces — one a flared glass-and-steel tower, the other a more solid concrete cylinder.

Gehry's team had its work cut out for it in designing a new complex on the Building 20 site. Many MIT researchers didn't want the old structure razed. They revered Building 20, not for its architecture but for the ideas conceived in its laboratories and offices.

The first Building 20 occupants perfected radar systems critical to the Allied forces victory in World War II. Later Amar Bose — of speaker maker Bose — is rumored to have surreptitiously tested his speaker designs in the building's anechoic chamber.

MIT's new Stata Center is outfitted with a wireless-enabled locator system for navigating its convoluted halls. Light-filled common areas — some with networked workstations available to occupants — bear no resemblance to the building's barracks-like predecessor. But the research being conducted inside Stata Center continues with tradition: Current MIT researchers are refining a 1,020-node microphone array (below) that can single out one voice among thousands of speakers, for example.



ANDY RYAN

More recently, Building 20 residents conceived ideas that evolved into companies such as encryption specialist RSA Security and content services provider Akamai Technologies.

"There was a lot of love for a building called Building 20," Gehry said last week at a dedication event.

But MIT leaders made the decision to retire Building 20 to make way for a larger, more modern facility that could accommodate CSAIL along with the university's Laboratory for Information and Decision Systems and its Department of Linguistics and Philosophy. The new building houses linguists and speech-recognition specialists alongside scientists devising tools for image-guided surgery and those building portable devices that understand human gestures.

Its formal name is the Ray and Maria Stata Center (Ray Stata is an MIT graduate and co-founder of semiconductor maker Analog Devices). It's 730,000 square feet — more than three times the area of Building 20. Running throughout Stata Center is a 10G bit/sec optical Ethernet backbone with 1G bit/sec Ethernet service to 1,000 desktops; Cisco Catalyst 6500 switches anchor the network.

Befitting its techie residents, Stata Center was built using digital replacements for tape measures. Instead of rolls of two-dimensional drawings, thousands of laser points projected from land-surveying gear told contractors where to cut and where to build, said Jim Glymph, who heads Gehry Technologies, a newly formed spinoff of Gehry's design firm. While other clients have been skeptical of the lack of physical construction documents, at MIT the response was, "Well of course, how else would you do it?" Glymph said.

Collocation by design

From the outside, Stata Center looks like a dozen buildings squeezed together by the hand of a giant. Brick, stainless steel and painted white aluminum facades run into each other and create a series of irregular protrusions. Within the curves and angles are labs, offices and lecture halls. There's even a mirrored cylindrical volume called the "nose" that houses a robotics lab.

Inside the building, the architects tried to replicate some of the messy atmosphere of Building 20 by specifying plain concrete floors and simple plywood dividers between workstations. Gehry wanted users to feel comfortable tearing down or punching holes through interior walls; the finishes are not intended to be "precious," Gehry said.

The Stata Center layout is designed to encourage collaboration among researchers of different disciplines. Virtually none of the corridors are straight; tucked in the angles are countless open areas which can be used as informal meeting spaces. There are also multiple cafés, a gym and day-care center.

"The need was for something that would attract collisions of people by accident," Gehry said.

Building 20, with its small, closed offices, encouraged researchers to hole up in solitude, whereas the Stata Center strives to create intimacy and interaction, he said.

At least one researcher says the plan is working — seeing activity through the glass walls of his team's lab pulls him inside, says Anant Agarwal. "I come into the lab a lot more often than before," he says. Agarwal is working on a 1,020-node microphone array, powered by a tiled parallel-processor architecture, that can separate the voice of one speaker from among thousands of voices.

Erik Demaine likes the irregularly shaped offices. One might expect this MIT professor to, because his research is in computational origami.

"I like the far-out crazy geometries," says Demaine, who is studying the mathematic and algorithmic aspects of paper folding. It's a research area that could seem a bit frivolous, on the surface. But Demaine is pursuing unexpectedly practical uses for the technology, such as designing safer airbags.

For professors Seth Teller and Jon Leonard, the building's complexity provides a great opportunity to test their robots. The pair is working on autonomous robot navigation and mapping — their robots are programmed to explore an unknown area, build a model of the environment as they go along and then use that model to determine location. Stata Center with its maze of corridors seems a perfect testing habitat for this team. ■

Get more information online.
DocFinder: 1952
www.nwfusion.com

Got great ideas?

■ Got an idea for A Wider Net story? An offbeat network industry-related topic? A fascinating personality we should profile? Send along your ideas to bbrown@nww.com.

■ **Network World**, 118 Turnpike Road, Southborough, MA 01772-9108, (508) 460-3333.

Periodicals postage paid at Southborough, Mass., and additional mailing offices. Posted under Canadian International Publication agreement #40063800. Network World (ISSN 0887-7661) is published weekly, except for a single combined issue for the last week in December and the first week in January by Network World, Inc., 118 Turnpike Road, Southborough, MA 01772-9108.

Network World is distributed free of charge in the U.S. to qualified management or professionals.

To apply for a free subscription, go to www.subscribenw.com or write Network World at the address below. No subscriptions accepted without complete identification of subscriber's name, job function, company or organization. Based on the information supplied, the publisher reserves the right to reject non-qualified requests. Subscriptions: 1-508-490-6444.

Nonqualified subscribers: $5.00 a copy; U.S. - $129 a year; Canada - $160.50 (including 7% GST, GST#126659952); Central & South America - $150 a year (surface mail); Europe - $205 a year (surface mail), all other countries - $300 a year (airmail service). Four weeks notice is required for change of address. Allow six weeks for new subscription service to begin. Please include mailing label from front cover of the publication.

Network World can be purchased on 35mm microfilm through University Microfilm Int., Periodical Entry Dept., 300 Zebb Road, Ann Arbor, Mich. 48106.

POSTMASTER: Send Change of Address to **Network World**, P.O. Box 3090, Northbrook, IL 60065.

BPA INTERNATIONAL BPA WORLDWIDE

USPS735-730

NetworkWorld®

InteropNet Labs Las Vegas 2004 at NETWORLD+INTEROP

Network World is the Exclusive Media Sponsor of iLabs—a live test bed designed to

give NetWorld+Interop attendees hands-on, unbiased insight into the state of emerging technologies. Stop by the iLabs booth on the show floor for an up-close, personal experience with these new technologies:

- Interoperability of SIP-based Voice-over-IP products
- Wired and Wireless LAN Access Security
- Advanced Internetworking using MPLS

iLabs Booth 111

Network World Testing Track FREE to all N+I registered attendees—*three interactive conference sessions presented by Network World Lab Alliance members who will discuss test methodology, offer advice on testing process pitfalls and explore which products you should include in your testing short list.*

Also be sure to visit the Collaboration and VoIP Theater presentations at Booth 127 in the Exhibit hall.

NetworkWorld Lab Alliance

Testing 10GBE Gear

David Newman, Network Test

With 10G Ethernet moving out of the early adopter stage and into the mainstream, it's time for network managers to take a good look at the new technology. This session presents results of the most extensive tests yet conducted on 10G Ethernet switch/routers and printed in *Network World*. The session also explores why latency, jitter, and packet loss have a much more significant impact at 10G rates than with earlier versions of Ethernet.

Tuesday, May 11, 2004
2:00 pm – 3:00 pm ◆ ROOM N115

Testing SSL VPN Products

Joel Snyder, Opus One

The SSL VPN product niche is so new, in fact, that there is not even market agreement on what products based on this technology should comprise. In the recent Network World SSL VPN tests, Snyder tested both the features and functionality of many of the disparate products on the market today to help sort out what products are feasible for use in an enterprise network.

In this session Snyder will present his methodology for evaluating SSL VPNs, and give examples of how Network World ranked industry-leading products according to this methodology. Attendees will also learn about criteria they can use to hone in on which SSL VPN products to bring into their own test labs for consideration.

Wednesday, May 12, 2004
2:00 pm – 3:00 pm ◆ ROOM N115

Testing IDS and IPS with Open Source Tools

Rodney Thayer, Independent Security Consultant

Intrusion detection and intrusion prevention technology, whether in standalone devices or integrated into other network infrastructure gear, are valuable resources for today's network manager. However, like other safety devices—like smoke detectors, fire extinguishers, or watchdogs—they should be tested periodically to confirm they are in fact operating as they should. In this presentation, Thayer will discuss how to use open source, readily available tools to construct a test bed that can be used to scientifically exercise and measure, in a reproducible and comparable manner, IDS and IPS systems.

Thursday, May 13, 2004
2:00 pm – 3:00 pm ◆ ROOM N115

Collaboration and VoIP Theater Presentations

Christine Perey, Perey Research and Consulting Services

Hear the latest about existing and emerging collaboration technologies—VoIP hardware and software, streaming media delivery tools, videoconferencing technologies, portal software, instant messaging, and collaboration suites. Christine Perey, Network World Lab Alliance member, will moderate discussions on all these topics.

Tuesday – Thursday
May 11 – 13, 2004
During Exhibit Hours ◆ BOOTH 127

NetworkWorld THE LEADER IN NETWORK KNOWLEDGE
Brand • Community Leads

Management

continued from page 1

Sasser worm congested networks around the world, the timing of the product introductions couldn't be better (see story, page 11).

"We're looking for easier, less manual and less tedious ways to distribute patches to workstations and servers," says Larry Sikon, CIO at Thomas Weisel Partners, a banking and brokerage firm in San Francisco. "[Patch management] tools in the past have had a degree of complexity I am not comfortable with at my organization."

"Management vendors are getting into security by spotting traffic patterns and packet characteristics that could be indicative of an internal or external attack," says Glenn O'Donnell, program director at Meta Group.

Among companies looking to impress N+I attendees is newcomer Autonomic Software. The company plans to introduce its Autonomic Network System and Administration (ANSA) software, which is designed to automate distribution of patches across servers and desktops. Company executives say Autonomic will compete with Symantec, which recently announced its plans to add systems and patch management to its security products.

Sikon is evaluating the Autonomic product and says it could eliminate the manual server and desktop visits his staff of 40 perform when patching systems.

The software combines asset inventory and discovery tools with up-to-date vulnerability and virus data to ensure systems are patched before a breach in security. ANSA performs an initial automated discovery of IT assets and then begins scanning networks for potential vulnerabilities. When open router ports or unpatched servers are found, the software uses pre-defined policies to deliver patches, lock down ports and quarantine servers. The software also tracks application versions, licenses and usage on server and desktops.

Autonomic hosts a data repository, which is kept up to date with vulnerability and patch data. Customers install centralized software on a dedicated Windows server and are connected to the repository, which sends updates over the Internet via XML interfaces and Web services.

Pricing for ANSA starts at $35 per agent for up to 100 agents and $13.50 per agent for more than 2,500.

NetQoS also will use N+I to strut its security stuff. The company is expected to preview additions to Version 6.0 of its flagship ReporterAnalyzer software that enable vulnerability scans across a network. The company's performance management software, which comes packaged on a Dell or HP box, now can perform vulnerability scans across network traffic. The new Virus Scan Wizard can isolate infected devices based on traffic thresholds for a specific port and capture real-time traps of the events leading up to the problem so that the data can be analyzed.

NetQoS uses a data collector that sits near core network routers, a data interpreter that is connected to a hub router and server reporting software. The collectors passively monitor Cisco NetFlow traffic, compress the data and send it to the interpreter, which sorts it out for network administrators using a Web browser-based console. The upgraded software costs $50,000.

Also at the show, Solsoft will demonstrate Version 6.0 of its Policy Server software for tracking events across firewalls, routers, switches and VPN gear. The upgraded edition features a new reporting tool that can be used to extract audit and change history information from a centralized repository of security policies. For example, if a worm that uses a certain port strikes a company, a network manager can use Policy Server to quickly determine which servers allow traffic on that port and lock them down, the company says. Another new feature enables network managers to automatically provision multiple fully meshed and hub-and-spoke IPSec VPN tunnels. Version 6.0 is scheduled to ship in the third quarter priced starting at $15,000.

Separately, NetIQ next week plans to unveil two upgraded products: Security Manager 5.0 and Vulnerability Manager 5.0. The vendor is adding integration between its security and application management products, and has partnered with TruSecure and Shavlik Technologies to provide vulnerability intelligence and patch management capabilities to its products.

Security Manager 5.0 collects security events from multiple points on customer networks, then filters, correlates and normalizes the events to alert IT staffs about the source of any threats. Vulnerability Manager 5.0 scans networks for known problems and now works with technology from Shavlik to distribute patches.

Pricing for each product ranges from $1,500 to $2,000 per server.

In addition to helping firms safeguard their networks against attacks, vendors at N+I will focus on application performance.

Start-up Optimum uses distributed appliances and technology-specific software modules that collect and deliver performance metrics to a centralized server to optimize the performance of voice, audio and video applications over IP, public switched telephone network and wireless networks. The system monitors applications for packet loss, jitter and overall quality.

Enterprise pricing for the company's Concerto offering starts at $48,000 and varies depending on network configuration and software modules purchased.

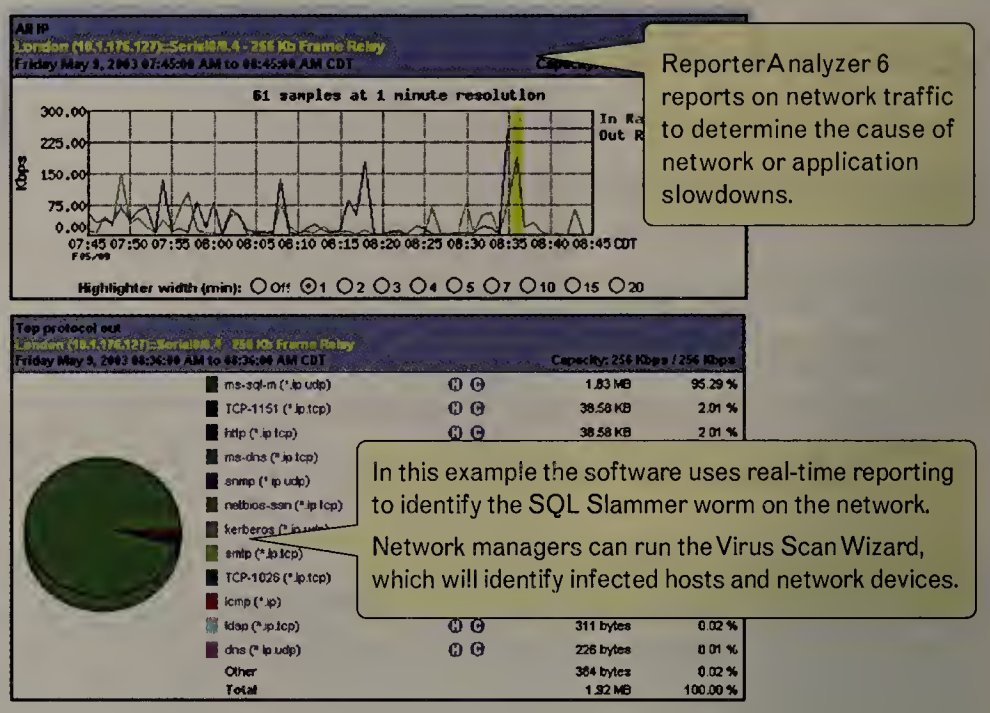
Separately, Entuity will unveil Eye of the Storm 3.5, which now includes a reporting engine that taps into the product's historical database and lets network managers query data and then create reports based on multiple metrics.

Eye of the Storm resides on a centralized server and uses a combination of automated discovery, event traps and polling algorithms to extract data from network, system and application sources.

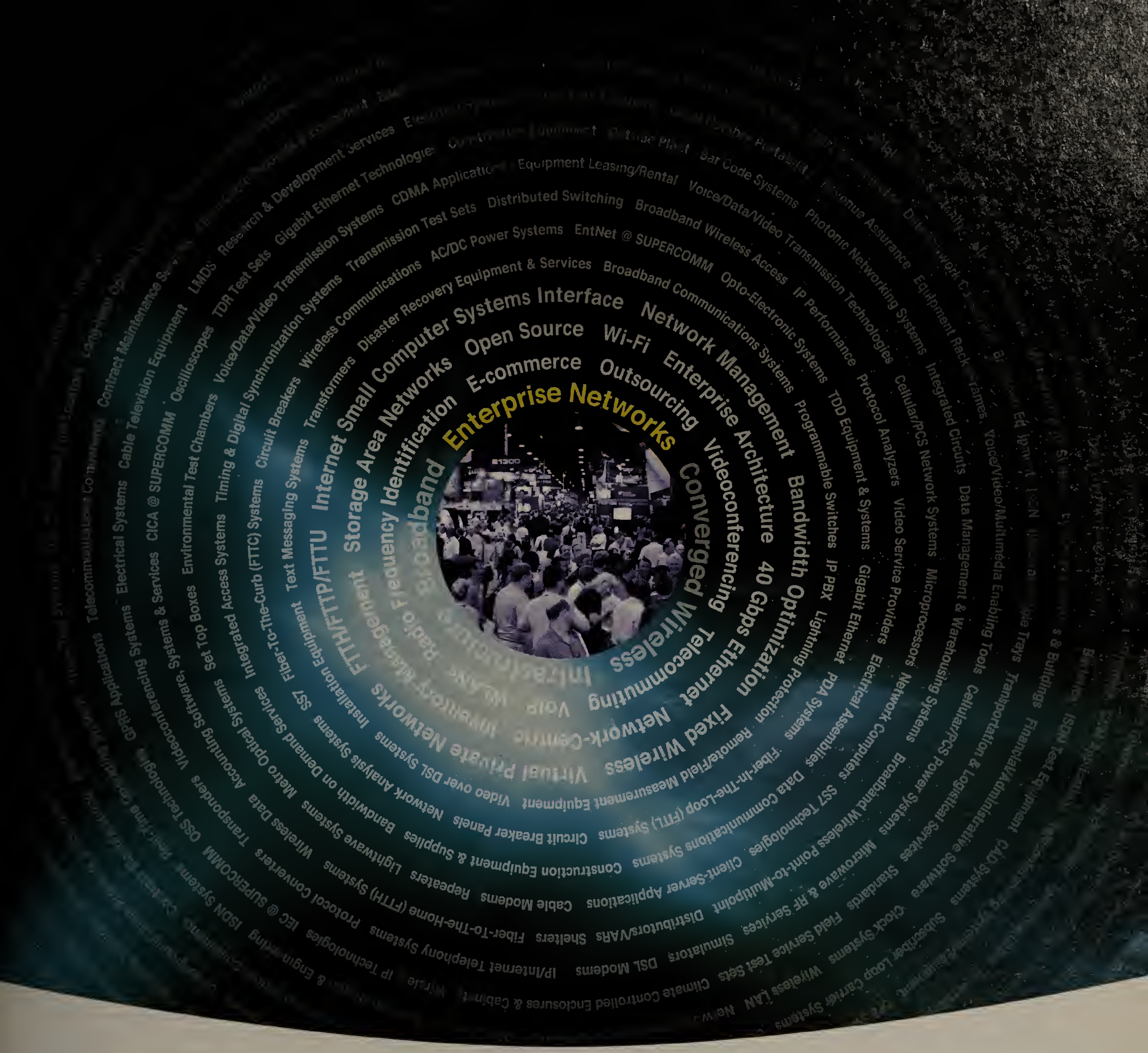
Also new in Version 3.5 is configuration support for Service Assurance Agent probes built into Cisco devices. Version 3.5, starts at $50,000.■

Protocol-level protection

NetQoS' ReporterAnalyzer 6 includes virus scanning designed to help spot anomalous activity across enterprise networks.



Get more information online. DocFinder: 1953 www.nwfusion.com



BackSpin Mark Gibbs

The fall of the 'itiot'

I hear far too many stories about non-IT folks who simply don't "get it" when it comes to their PCs. What these people don't get is that, whether they like it or not, they are responsible for how they use corporate IT resources, which includes how they accidentally abuse them. These willful people need a name we can identify them by ... how about "itiots"?

It seems that these itiots are as common today as they ever were and in many organizations the rot starts at the top. How many stories have you heard of CXOs who can't use e-mail?

And how many itiots come to you with IT problems they want solved but don't really want to know or care what's wrong — they just want it fixed and fixed now! These are the same people who frequently moan "Why can't it do X?" but don't actually want to know the reason or how to get around the problem — they just want to complain.

Now, handling data and turning it into actionable information — arguably the one and only goal for all business computing — is an extraordinarily complex process and demands skilled, intelligent users who know what they're doing and why.

But most of these itiots expect their computers will behave like their cars -- they expect to get in, turn the key and have it go without them having to think.

Unfortunately computers are not simple, at least not yet. Many of you will argue this is the way computers really should be. I agree. And everyone should have a million dollars and a yacht.

The problem is that wishing doesn't change reality, and no amount of hand waving by industry luminaries promising pen-based machines with voice recognition and intelligent software can change the fact that this vision is decades away. We're stuck with what we have to work with now.

It is inexcusable in this day and age for skilled employees to not know how to drive a computer at a more-proficient level than, say, an 8 year old.

After all, if their job included running a sophisticated photocopier we could quite reasonably expect them to know how to make reductions and enlargements, use duplexing, stapling and so on.

What I propose is that your organization adopt a Total Computing Initiative --- that it become a business that not only uses IT but actually embodies it from top to bottom. No employee, including the CEO, left behind!

A Total Computing Initiative should ensure that employees understand the what and why of business computing and how to fix common problems. Staffers should have significant insight into how computers work and how computers support and enhance business process.

If their PCs get messed up, it shouldn't be a complete mystery to them. They should have a clue and know how to get their machines fixed. Should they know how to manipulate registry settings? No. Should they know what defragging a disk means? Yes. Should they be capable of writing applications? No. Should they be able to create macros in Word? Yes.

It has occurred to me that it might be possible to assign a PC to each employee and make him responsible for its care and feeding.

The employee's review should reflect his ability to ensure the PC's uptime and ability to do the job assigned to it.

One of the benefits of a Total Computing Initiative would be the organization's network wouldn't create the adversarial situations that so often isolate the IT staff from everyone else.

Better still, problems that affect the organization's infrastructure would be identified quickly because of the increased number of users paying attention. Along with that, more business information would start to flow because everyone would be intimately involved in computers and communications.

So, say goodbye to your itiots and hello to a Total Computing Initiative.

Please, no itiots writing to backspin@gibbs.com.

Layer 8

By Melissa Shaw

IT nightmares

You IT pros don't have it easy. Stupid users, dastardly bugs and the success or failure of your company riding on your network, aka, your shoulders. No sweat, right?

Not quite. The stress has got to manifest itself somehow, and for some it's a nightmare. Infotrope.net's got a list from those who have fessed up, such as the woman who dreams in HTML, the guy who dreams he uses SNMP to manipulate everything or the poor soul stuck in a binary tree.

We know there's more good ones out there; therefore, we propose a contest. Send your worst IT nightmare to layer8@nww.com by the end of the day May 14, and the "best" one will win a D-Link 802.11b+ Wireless Access Point.

www.nwfusion.com, DocFinder: 1957

Gaga over Google

You would think Google was the first tech company to ever file an IPO.

The long-awaited action from those IPO teases drew a 900% increase in traffic to the Securities and Exchange Committee Web site. Between 2:30 and 3:30 p.m. April 29, the day of the filing announcement, it took as long as 45 seconds to download sec.gov, as opposed to the normal 4 seconds on a typical day when no one cares about the site.

According to measurement stats from Web site performance benchmarking company Keynote, during that 60-minute period, your chances of successfully downloading the SEC home page dropped to as low as 20%, as opposed to the normal 100% when your download is accompanied by chirping crickets.

DocFinder: 1958

Pump up that PC

"The Fast and The Furious" scene is coming to the PC set, as people are pumping up their processors and prettying up those dull beige cases.

The beautification trend, known as modding, offers enough illuminated fan grills, fluorescent cables and acrylic cases to turn any box into a small Las Vegas Strip.

According to the BBC, modding emerged from LAN parties as a form of "psychological combat."

Companies such as Sharkoon offer glow-in-the-dark/luminescent everything, while Cooler Master sells PC dashboards — what they call Function Panels — that display "fan voltage, the audio sound pressure and the temperature of the thermal sensor."

DocFinder: 1959

The latest NYC tourist attraction

If you see men dressed like Pac-Man characters chasing each other around Washington Square Park in New York, don't be alarmed — it's just graduate studies.

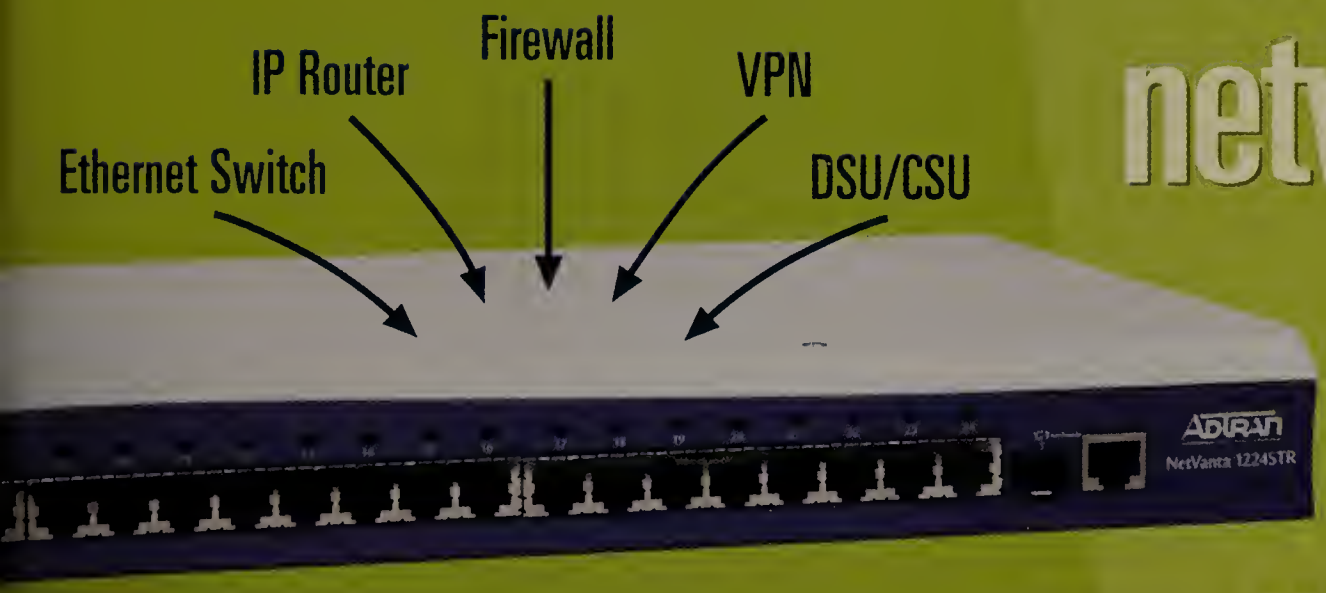
According to Pac-Manhattan organizers, this "analog version" of the classic video game is part of New York University's Interactive Telecommunications graduate program, designed to "explore what happens when games are removed from their 'little world' of tabletops, televisions and computers, and placed in the larger 'real world' of street corners and cities."

Pac-Man chases four ghosts around the NYU area, guided by five people ("controllers") running the game and directing his movement via a cell phone. Organizers will use Wi-Fi and special software to simulcast the game online so nerds not sitting in Washington Square Park can watch. Schedules posted on http://pacmanhattan.com/ offer a glimpse of upcoming games you can watch live or online.

DocFinder: 1960

Shaw is chief cook and bottle washer of Layer 8, your online rumpus room featuring the best of Network World Fusion and the not-just-networking news. She can be reached at layer8@nww.com. Shaw and colleague Adam Gaffin are sharing chair-warming duties until 'Net Buzz overlord Paul McNamara returns from medical leave.

Networld+Interop
Booth 417



NetVanta 1224STR
The functionality of five devices for the price of one.

An all-in-one network access solution (that looks like a switch).

Introducing the NetVanta® 1224STR from ADTRAN®.

Dare to Compare!	NetVanta 1224STR
Managed, 24-Port Layer 2 Switch	✔
Gigabit Ethernet Uplinks	✔
IP Access Router	✔
Stateful Inspection Firewall	✔
DSU/CSU	✔
QoS	✔
VLAN trunking	✔
Command Line Interface (CLI)	✔
Intuitive Web GUI	✔
ADTRAN OS	✔
Optional Virtual Private Networking	✔
Optional Dial Backup	✔
Optional PBX Connectivity	✔
Unlimited Telephone Technical Support	✔
Free Firmware Updates	✔
5-Year Warranty	✔

Available at a price point well below competing multi-box solutions, the NetVanta 1224STR will change the way you connect remote locations.

Lower the cost of enterprise connectivity with the powerful new NetVanta 1224STR. This full-function WAN/LAN access platform does the work of ***five devices for the price of one.*** Suitable for networks of any size, the NetVanta 1224STR offers everything you need to bring a branch office or remote location online, including ***managed Layer 2 Ethernet switching, full-featured IP routing, firewall protection, VPN, and WAN termination***—all in a compact 1U chassis. It is QoS, VLAN, and Gigabit Ethernet capable, and offers ***affordable dial backup and voice*** options. ADTRAN's new NetVanta 1000 Series of Layer 2 Ethernet switches is backed by a ***100% satisfaction guarantee,*** including unlimited technical support, ***free firmware upgrades,*** and a 5-year warranty.

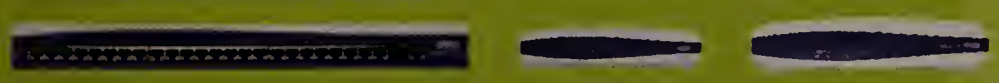
Test drive a NetVanta 1224STR today!
Win a free baseball cap!

www.adtran.com/info/coolswitch

TOLLY Up to Spec CERTIFIED

877.591.3055 Technical Questions
877.280.8416 Where to Buy

The NetVanta Series



NetVanta 1000 Series
Managed Layer 2 Ethernet Switches

NetVanta 2000 Series
Firewalls/VPN

NetVanta 3000 Series
IP Routers

The Network Access Company ADTRAN®

COST-CUTTING SOLUTIONS FOR

THE MOST CHALLENGING NETWORKS.

WHY SHOULD YOU CALL WILTEL?

THE REASONS IP ARE MULTIPLE.

THERE ARE MULTIPLE reasons to choose WilTel's MPLS-enabled IP network: Our 10 Gbps backbone. OC-192 transport. Over 12,000 access points nationwide. Zero outages during 9/11 and the 2003 blackout. A #1 customer satisfaction rating by Atlantic-ACM for the third year running. From dedicated Internet access to multipoint virtual private networks, WilTel delivers efficient and elegant IP solutions for top enterprises and carriers worldwide. With the next-gen genius required to consistently beat standard service level agreements and consistently outperform all other networks. Multiply speed, performance and flexibility, with WilTel.

WilTel℠
COMMUNICATIONS

Net Results. Not Excuses.℠

www.wiltel.com
Call 1.866.WilTel.2